W912HP-04-R-0002

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 95

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0003	25-Jun-2004	W81D4A-4020-1314	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
CONTRACTING DIVISION 69-A HAGOOD AVE CHARLESTON SC 29403-5107	W912HP	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. W912HP-04-R-0002
	X	9B. DATED (SEE ITEM 11) 28-May-2004
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
SEE CONTINUATION PAGE

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 25-Jun-2004

Lake Marion Regional Water Supply
Surface Water Treatment Plant

Answers to Questions

1. Request ACOE reissue correctly scaled drawings.

   Answer: Correctly scaled drawings (in "tif" format) were posted on the EBS web site by amendment no. 2

2. Please provide missing specification section listed on Table of Contents 02464A Metal Sheet Piling.

   Answer: Specification section 02464A was issued by amendment no. 2.

3. Please provide a specification for Accordian Partition Wall with Details shown on Drawings A4 & A22.

   Answer: Specifications for the accordian partition wall are shown on Plan Sheet A-22.

4. Please provide specification for skylight shown on Drawings A27 & A30.

   Answer: Specification Section 08600 is attached for the skylights.

5. Please provide Room Finish Schedule for Raw Water Pump Station - Drawing A2, Finished Water Pump Station - Drawing A29, and Sludge Thickner Building - Drawing A32.

   Answer: A finish schedule is not provided for the raw and finished water pump stations or the sludge buildings. The interior walls, ceiling, doors and frames will be painted per the specifications.

6. The Interior CMU/Drywall Partitions are not shown on the Operations Building Upper Floor Plan Drawing A4. Please provide.

   Answer: The CMU/drywall partitions should be shown on re-issued drawings.

7. On SF1442, 13.B. indicates that an offer guarantee is not required. Please confirm that a bid bond is not necessary to include in the price or technical proposals.

   Answer: A bid bond is not necessary to include in the price or technical proposal.

8. Please be advised that the following 2 drawings listed on the index are not on the web site to download: G-18 General Miscellaneous Details and A-15 Architectural Building Details.

   Answer: drawings A-15 and G-18 added by Amendment No. 2.

9. It appears that the scale on all of the drawings is incorrect. Can you issue drawings that have 100% or 50% scale?

   Answer: Correctly scaled drawings (in "tif" format) were posted on the EBS web site by amendment no. 2

10. On Drawing E-6, in the men's bathroom, a fixture type "Q" is shown. On Drawing E-7, under the catwalk, a fixture type "D2" is shown. Neither of these fixture types are shown on the fixture schedule on Drawing E-2.

    Answer: On Drawing E-6, Staff Bath, change the five (5) light fixtures type 'Q' to type 'C'. On Drawing E-7, under catwalk, change six (6) light fixtures type 'D2' to type 'D'.

11. All of our drawings, the scale does not match what is shown on drawing.

    Answer: Correctly scaled drawings (in "tif" format) were posted on the EBS web site by amendment no. 2

12. Drawings G-12 and G-13 do not indicate Dash vs. Solid lines, to show existing vs. proposed contours. Also on Drawing G-11, the boxes on contour lines are blank.

    Answer: Both existing and new contours are shown in revised sheets G-11 and G-12 ("tif" format) issued by amendment no. 2. On sheet G-13 no contours are to be shown on plan portion of sheet, but elevations are indicated in roadway profile.

13. Drawings RW-3 and RW-4 on the Plan View, there are arrows of information pointing to things but the lines and piping are not shown. Please provide.

    Answer: Line-work and piping are shown on drawings ("tif" format) issued by Amendment No. 2.

14. Drawings A-1, A-2, and A-4, the plans identify rooms but no wall lines are shown.

    Answer: Wall lines for rooms shown in drawings ("tif" format) issued by Amendment No. 2.

15. Drawing A-21, lab layout does not show the cabinets.

    Answer: Cabinets shown in drawings ("tif" format) issued by Amendment No. 2.

16. The Unit Price Schedule does not show a total. Is one required?

    Answer: Requirement added by Amendment No. 2.

17. Will any local building permits be required from the County or City? If so, who will be required to pay for them?

    Answer: A county building permit will be required and will be paid for by the Contractor.

18. On Sheet E-4, the single line shows a switchboard "ESB". On Sheet E-8, in the electrical room, a switchboard "SB" is shown. It appears that these are the same switchboard. Please verify that these are the same switchboard and clarify the labeling.

    Answer: Yes. Change on Sheet E-8 "SB" to read "ESB".

19. Should we show our total bid for all units on Page 15 of 63, if so would you revise that page and provide a line for the total lump sum bid.

    Answer: Requirement added by Amendment No. 2.

20. Specification Section 00600-Representations and Certifications is missing in the Bid Documents, would you furnish this form?

    Answer: Section 00600 – Representations and Certifications is on pages 37-49 of the Solicitation.

21. Drawing RW3 shows only the profile of raw waterline. Can Engineer show the plan view of the line from the intake screen to raw water pump station?

    Answer: Plan view shown on drawings ("tif" format) issued by Amendment No. 2.

22. On Drawing G-4 there are two shaded areas one adjacent to membrane tank and one next to retention ponds. What are they?? There are no legend on the drawing showing these items. Also the legend for new and existing asphalt are identical on drawings. Can you provide different shades?

    Answer: Function of areas in question are noted on revised drawings ("tif" format) issued by Amendment No. 2. A better legend is also provided on revised drawings.

23. Since some of the process equipments have been pre-selected and with current trend in steel, metal, and rebar shortage and price escalation, have you factored in the deliveries in setting the total contract time and liquidation damages?

    Answer: Deliveries have not been specifically factored into contract time and liquidated damages. Contract time (and associated liquidated damages) have been determined based upon a reasonable time for construction for this type and size of

project. This is a fixed price contract and offerors are expected to know and understand the current marketplace and propose accordingly.

24. On Sheet E-3 there is a note referencing the primary cable to the pad mount transformer- "Direct burial medium voltage underground cable by power co". On the same sheet, this feeder is referenced by 12 (note: the 12 is written inside the circle shape but I was unable to type in this format). This calls for 2-6" conduits with pull cord and 3/0 bare copperwire. Do we provide conduits to property line? Or stub outs from transformer?

    Answer: Provide concrete encased conduits and grounding cables as per designation '12' in schedule of major site conduits. Delete from Sheet E-3 notation that reads "Direct burial medium voltage underground cable by power co".

25. Drawings RW-3 & RW-4 are plan and profile. Plan view does not show pipeline location in relation to notes.

    Answer: Line-work and piping are shown on drawings ("tif" format) issued by Amendment No. 2.

26. Drawing G-9 Plant Piping Layout details and piping locations shown on the plant roadway are unreadable.

    Answer: Layout piping details and piping locations clarified in drawings ("tif" format) issued by Amendment No. 2.

27. On Sheet E-22, the section 3/E3/E26 appears to be the wrong reference. Shouldn't this be 6/E3/E26? Also, for this run, on sheet E-3, Designation 12 calls for a 3/0 groundwire. The detail – 3/E3/E26 – shows a 1/0 counterpoise in the ductbank. Is the 3/0 groundwire in addition to the counterpoise? Also, do we install a 3/0 in both conduits?

    Answer: The correct detail reference is 6/E3/E26 and the correct wire is #1/0 AWG as described here. Please make the following changes:

    Sheet E-22: Change on Partial Lower Floor Plan ductbank section reference from 3/E3/E26 to read 6/E3/E26.

    Sheet E-3: on Schedule of Major Site Conduits, designation '12' under 'wire and conduit': Change #3/0 bare copper ground to read #1/0 bare copper ground encased in concrete as shown on 6/E3/E26.

28. On Sheet E-3, at the treatment plant power company transformer, the transformer pad appears to be on top of a manhole. However, the square that looks like a manhole is not labeled. Sheet E-22 doesn't show a manhole. Is there a manhole her other than Handhole PHH-1?

Answer: No, there is not a manhole near transformer pad. Please make the following changes:

Sheet E-3: At treatment plant delete the lightly drawn square overlapping the pad mounted transformer and provide #12 Designation (within circle), per Schedule of Major Site Conduits from pad mounted transformer to power manhole '8' (within diamond symbol).

29. On Sheet E-21 UH-9 does not have a disconnect. All other unit heaters have a disconnect switch. Should this unit heater have a disconnect.

Answer: No, since it is in sight from panelboard. Please make the following changes to the drawings:

Sheet E-21: Delete disconnect switch for UH-10 and connect directly to UH-10 from panel 'SH'.

30. Division II, Section 11901. This section names Zenon as the sole source provider for the Hollow Fiber Membrane Treatment System. The same firm that represents Zenon also represents manufacturers for all the other equipment to be supplied for this project; passive screens, clarifier thickeners, belt press, GAC, bottoms and flocculators. This firm can "package" all the equipment around the sole source items because the contractor has no choice. This will eliminate any competitive bidding on the equipment. Why not go ahead and put the cost of the sole source Zenon Equipment in the bid form so that the remainder of the equipment will be competitively bid? We believe this to be a serious matter because it does eliminate competition on equipment.

Answer: The Zenon system and equipment specified section 11901 is to be supplied as a package and is to be provided by a single manufacturer (Zenon of Toronto Canada). The contractor may provide equipment specified in other specification sections from other suppliers and/or manufacturers. In paragraph 1.1 of specification section 11901 change sentence "The equipment to be used by the contractor will be manufactured by Zenon of Toronto Canada." to read as follows: "All equipment specified in this specification section shall be furnished as a package and shall be manufactured by Zenon of Toronto Canada."

31. Drawing E-11 references "Instrumentation Wiring shown on E-40". Please confirm.

Answer: Please make the following change:

"Sheet E-11: Change references, in two places, on floor plan to "Sheet E-40" to read "Sheet E-10A".

32. P&ID drawings, E drawings and Specifications all have RTU I/O points shown or described. In case of a confliction between these sources, which one shall apply? Based on our interpretation of the drawings, the following are examples:

    Raw Water Pumps
    P&ID- 3 drawing shows 4 signals per pump between Raw Water Pump and RTU
    E-19 shows 13 signals for 4 pumps
    E-32 shows 5 signals per pump plus 1 signal from RTU-FW

    Raw Water Control Valve
    P&ID-4: Shows valve status contacts, 4-20 control, 4-20 position indication
    E-25: Shows 4 discrete signals and 1 analog signal
    Specification: Sec. 15200, para. 2.13.11.3 requires valve status and 4-20 control

    Flocculation System:
    Drawing E-14 shows a "motor off" signal to RTU-WT. This is not shown on the P&ID's

    Vacuum Priming System:
    P&ID-3 drawing shows 4 (discrete) signals between Vacuum Priming System and RTU
    E-19 shows 3 discrete signals between Vacuum Priming System and RTU

    Combined Filter/GAC Water Sample
    P&ID-9 has different tags than E-8

    Answer: The "P&ID" drawings provide the I/O for the treatment processes. The "E" drawings provide additional I/O for items such as security, etc. Refer to all drawings for total I/O list. Refer to "E" drawings for the conduit and wire/cable locations.

33. Section 11211A, Page 8, Para 2.2.2, Wording in Question: Variable speed drive P35 1-4; Suggested Wording Replacement or notation: Please add P-88-1/2.

    Answer: The following change shall be made to the specifications:

    Section 11211A, Page 8, Paragraph 2.2.2 Variable Speed Drive – Add "P-88-1 / 2."

34. Section 11211A, Page 9, Para 2.2.6, Wording in Question: Impellers shall be of …bronze…; Suggested Wording Replacement or notation: ZENON included 316SS impellers in budgetary proposal, which are an upgrade from bronze and are better suited for the Membrane Filtration System service and membrane protection. ZENON requests this section be updated to include 316SS impellers.

Answer: The following change shall be made to the specifications:

Section 11211A, Page 9, Paragraph 2.2.6 – Revise paragraph to read "shall be constructed of 316 stainless steel."

35. Section 15200A, Page 29, Para 2.13.9.1 Wording in Question: Valves shall conform to AWWA C504; Suggested Wording Replacement or notation: ZENON included Resilient Seated Butterfly valves in budgetary proposal. Please confirm if valves rated for a higher # of cycles is an acceptable alternative and update this section to include. Refer to Note 1 below for detailed explanation.

Note 1: AWWA C504 vs. Non-AWWA Resilient Seated Butterfly Valves

Cycles:

AWWA C504 valves - Have only been designed for 100,000 cycles and are primarily used as transmission valves where they are rarely cycled.
Tyco Fig 222 valves - Have been designed for and tested to over 1,000,000 cycles.

The higher cycle rating is important for the actuated valves which will see regular cycling daily.

Materials:
Each valve has a Cast Iron body.

AWWA C504 valves - Some manufactures offer an NSF seat that is recessed and bonded in the body. Part of the coated metal I.D. is exposed to the media creating an area for tuberculation (rust) to occur.
Tyco Fig 222 valves - Have an EPDM seat that envelops the body isolating the media from the body coatings or metallurgy.

It is important to ensure that all valves are designed to protect against corrosion, which could deposit particulate into the water and damage the membranes or reduce the valves ability to open and close properly.

Answer: The following change shall be made to the specifications:

Section 15200A, Page 29, Paragraph 2.13.9.1 – Add a statement to read "Valves provided by Zenon as a part of the membrane equipment may be Non-AWWA, resilient seated butterfly valves."

36. Section 11901, Page 8, Para 1.3, Wording in Question: A hollow membrane…; Suggested Wording Replacement or notation: Delete "Contracting Officered" as it does not appear to belong in the context of the paragraph.

Answer: The following change shall be made to the specifications:

Section 11901, Page 8, Paragraph 1.3 – Delete "an Contracting Officered."

37. Section 11901, Page 11, Para 1.8, Wording in Question: System Design Capacity; Suggested Wording Replacement or notation: ZENON's budgetary proposal include Membranes to treat an initial capacity of 8 mgd with expansion capability to 12 mgd. ZENON recommends adding statement to confirm the Initial Membrane Capacity of 8 mgd, with future capacity of 12 mgd.

Answer: The following change shall be made to the specifications:

Section 11901, Page 11, Paragraph 1.8 – The paragraph shall be clarified as follows: "The initial plant capacity (membranes and associated equipment) shall be 8 MGD. The hydraulic capacity of the equipment as provided by Zenon and installed by the Contractor shall be 12 MGD."

38. Section 11901, Page 16, Para 2.1.1.7, Wording in Question: Significant process equipment (Pumps, Blowers, Compressors etc.)…shall be provided with one on-line spare…; Suggested Wording Replacement or notation: ZENON's budget proposal included one (1) blower, one (1) vacuum pump and one (1) backpulse pump as on-line spares. Since "significant process equipment" is not defined please provide a list of required on-line spare equipment.

Answer: The following change shall be made to the specifications:

Section 11901, Page 16, Paragraph 2.1.1.7 – The significant equipment shall be specifically: 1-blower, 1-vacuum pump, and 1-backpulse pump.

39. Section 11901, Page 18, Para 2.1.4, Wording in Question: Fourth sentence- "….stable particle counts…"; Suggested Wording Replacement or notation: ZENON's budgetary proposal included laser turbidimeters instead of Particle counters. Please update this sentence to read "….stable turbidity…"

Answer: The following change shall be made to the specifications:

Section 11901, Page 18, Paragraph 2.1.4 – Revise paragraph to read "stable turbidity. The analog…"

40. Section 11901, Page 27, Para 3.11, Wording in Question: Point 4- "Membrane Filtered water particle count indication for each Membrane Filtration Unit"; Suggested Wording Replacement or notation: Please update Point 4 to include turbidity instead of particle counts.

Answer: The following change shall be made to the specifications:

Section 11901, Page 27, Paragraph 3.11 – Delete Point 4 "Membrane filtered water particle count…" and change Point 5 to read "Membrane filtered water laser turbidity measurement…"

41. Section 11901, Page 30, Para 3.14, Suggested Wording Replacement or notation: ZENON's budget proposal included the MCC & VFD's for the Membrane equipment please confirm who's scope the MCC & VFD's are in.

Answer: The following change shall be made to the specifications:

Section 11901, Page 30, Paragraph 3.14 – Revise paragraph to read "Motor control equipment listed in the Zenon Scope of Supply shall be provided by Zenon and installed/started up by the Contractor. All other necessary electrical equipment shall be furnished and installed by the Contractor in compliance with the Contract Documents."

42. Section 16261N, Page 9, Para 2.1b, Wording in Question: The converter shall utilize a 18-pulse wave bridge design…; Suggested Wording Replacement or notation: ZENON's budgetary proposal included a 6-pulse VFD. This specification requires and 18-pulse VFD. Please confirm what VFD's will be required for the Membrane Filtration System.

Answer: The following change shall be made to the specifications:

Section 16261N, Page 9, Paragraph 2.1 – Add the following statement to the first paragraph "VFD Equipment supplied by Zenon is not required to meet the following specification."

43. Section 16261N, Page 14, Para 2.5.4, Wording in Question: Bypass Motor Operation; Suggested Wording Replacement or notation: ZENON budget scope did not include bypass motor Operation and we strongly recommend against them for the Membrane system.

Answer: The following change shall be made to the specifications:

Section 16261N, Page 14, Paragraph 2.5.4 – Add the following statement to the first paragraph "VFD Equipment supplied by Zenon is not required to meet the following specification."

44. Section 11316, Page 2, Para 2.1. We would like to bid our Vee-wire underdrain as an equal to the folded plate underdrain specified. Also, 304SS is not recommended for GAC service. We recommend either 316L or PVC.

Answer: Alternate equipment will not be considered at this time or as a part of the proposal. The contractor may provide value-engineering proposals or propose alternate equipment after contract award during the shop drawing development and review process subject to the conditions of the contract.

45. How should GAC be supplied to the site?
    a. 1,000 or 1,100 lb supersacks or
    b. 20,000 – 40,000 pound slurry trucks?

Answer: The Contractor shall choose the method of delivery. The GAC media shall be thoroughly washed prior to installation.

46. To what extent of service/installation is required by US Filter Westates?
    a. Complete turnkey carbon (GAC) fill services to include carbon supply, transportation services, crane rental for carbon filling (if drop filled) or slurry services.
    b. Simple delivery of bulk bags to site for the contractor to load carbon?

Answer: The Contractor shall choose the method of delivery and placement of the GAC Media.

47. What mesh size for the carbon (GAC) is required/preferred?
    1. 8 X 30 mesh
    2. 12 X 40 mesh

Answer: The media shall meet the requirements as provided in Specification Section 11225A.

48. Will there be a need for Technical Support Services on-site prior to installation, during or after installation? And, what Technical Support Services are anticipated/requested/required?

Answer: No on-site technical support services will be required.

49. Section 13400, page 2, lists "Two (2) insertion type magnetic flowmeter for raw water".....my question is pipe size and where they might appear on the drawings?

Answer: The following change shall be made to the specifications:

Section 13400, Page 2, Paragraph 1.1.4 – Revise 6th equipment item in paragraph to read "Two (2) insertion type magnetic flowmeter for 20" raw water." The equipment is shown on Plan Sheet EN-27.

50. Section 13400, page 3, lists "Two (2) insertion magnetic flowmeter and converter for the 24" south distribution system".....my question is where on the drawings?

Answer: The following change shall be made to the specifications:

Section 13400, Page 3, Paragraph 1.1.4 – Revise 28th equipment item in paragraph to read "Two (2) insertion type magnetic flowmeter for 36" distribution water main."

51. Div. 13 - Special Construction, Section 13410:

a. page 5- "Two (2) insertion magnetic flowmeter with converter for 20" raw water main".....seems to be shown on drawing EN-27 and P&ID-4?

b. page 5- "One (1) insertion magnetic flowmeter with converter for dual media backwash flow".....questions are pipe size and where shown on drawings?

c. page 5- "One (1) insertion magnetic flowmeter and converter for 30" finished water main.....question is where shown on drawings?

d. page 5- "Two (2) insertion magnetic flowmeter and converter for the 30" distribution system.....are possibly mentioned on drawing EN-32 and P&ID-8 as a 36" pipe? Is this pipe size mis-labeled?

Answer:

a. Shown on Sheets EN-27 and P&ID-4.

a. The following change shall be made to the specifications:

Section 13410, Page 5, Paragraph 1.3.4 – Delete the 2nd equipment item in paragraph "One (1) insertion magnetic flowmeter…for dual media backwash flow."

b. The following change shall be made to the specifications:

Section 13410, Page 5, Paragraph 1.3.4 – Delete the 6th equipment tem in paragraph "One (1) insertion magnetic…for 30" finished water main."

c. The following change shall be made to the specifications:

Section 13410, Page 5, Paragraph 1.3.4 – Revise the 7th equipment item to read "Two (2) insertion…for the 36" distribution water main."

52. The Drawings issued by Amendment No. 2 are still NOT 'to scale'. We cannot open or download EN1 through EN5. The error message that appears instead of opening states "The document cannot be opened. The document's format is invalid or not supported." Additionally, we were unable to open the drawings on the ACOE Website. We request the ACOE correct ALL issues with the drawings and EXTEND the bid date accordingly.

Answer: Drawings EN1 through EN5 drawings files were corrupted. These Drawings are replaced on the EBS website and are now readable/printable following instructions issued in amendment no. 2. The proposal due date is not extended.

53. The Amendment No. 2 page 2 of 9 states in 4.a. 'to choose D size 24x26 which conflicts the Drawing G-2 scale note that states 'full scale is 22x34'. Please advise what the proper scale should be. Referencing Amendment No 2 page 2, 3.a. states to 'select scale factor for drawings'. What are the instructions when there is more than one scale on one (the same) drawing? Due to the fact that ALL drawings were updated by Amendment No. 2, additional time is needed to distribute updated plans & specs to all subcontractors and suppliers to offer the most favorable proposal to the owner. Please address ALL the issues with the drawings and EXTEND the bid date accordingly.

Answer: Drawings were previously provided on the EBS website as CAL format drawings that could be read using MaxViewer. Translation of the drawings into CAL format drawings caused a distortion in the scale of certain levels of some plotted drawings and also altered some text styles and line weights. As stated in Amendment No. 2, drawings are now available through the EBS website as TIF drawings which should be read using MaxViewer. File format was changed on ALL of the drawings, but the basic information on the drawings has not changed; it is now available in a clearer format. The proposal due date is not extended.

54. Are there any Geotechnical Information and/or Reports in relation to the location of the Raw Water Intake Line & Screens? If yes, please provide.

Answer: All existing project geotechnical information is included in the specifications. Spec Section 02456A requires that the contractor shall contract with a subsurface investigation firm to perform an evaluation adequate for pile design.

ADDITIONAL ITEMS

1. The following change shall be made to the specifications:

Section 11338N, Page 6, Paragraph 2.2.1 – Revise paragraph to read "Rating of 41,667 foot-pounds…" and "peripheral speed of 10 fpm…"

2. The following change shall be made to the specifications:

Section 11338N, Page 8, Paragraph 2.2.3.5 – Revise paragraph to read "Bearings shall be oil lubricated only."

3. The following change shall be made to the specifications:

Section 13420, Page 4, Paragraph 2.1.1.1 – Delete entire paragraph.

4. The following change shall be made to the specifications:

Section 13420, Page 4, Paragraph 2.1 – Add the following:

2.1.2 REMOTE TELEMETRY UNITS

The instrumentation, controls and remote terminal units supplied under this specification must be coordinated with the software and hardware as supplied by the system integrator. The Remote terminal units shall supply all internal and external devices for the successful gathering and communication of signals into the new plant supervisory control and data acquisition.

2.1.2.1 Panel Equipment

Remote Terminal Units shall be designed to interface with other equipment as shown on the Drawings and as described in the Specifications. The remote terminal unit shall have panel construction of 316 stainless steel and polished after fabrication. No darkened spots on the panel, unground cuts or welding or unfinished fabrication of any type will be allowed. Each panel shall carry a U.L. label after the complete panel is fabricated and wired with all components. Each panel shall carry power supplies, glove type hand-off automatic switch for each electrical device, and nameplates with a minimum of 1/4" lettering for each function on each panel. Internal to each panel shall be a steel subplate covering the entire back of each panel, 20 amp circuit breaker minimum for each panel, duplex receptacle, internal light, light switch, minimum 10 amp circuit breaker for each external electrical device, ground buss for each panel for each component to be grounded, 10 spare terminal blocks over and above those needed for the initial operation, surge

protection cards for all 4-20 ma signals into and out of each panel (one protection card per each signal line, and control relays for the appropriate outputs to field devices). Signal line protectors shall consist of cards especially fabricated for the application of track mounted 4 to 20 ma surge protection where required. Each card shall contain varistors (metal oxide varistors) line to line and line to ground inductors, zener diodes, gas tube arresters and fuses on a PC board which mounts in snap track as supplied by integrator. Each card with all the previous components shall be completely labeled with necessary information as a standard component so as not to need a special table or chart to show proper terminal connections.

2.1.2.2 Network Interface

RTU's network design shall include but shall not be limited to all interfacing with all panels, switchboards, MCC's, remote Plant locations, fire alarm systems, transfer switches, diesel generator set, etc. shown on the Drawings or described in the Specifications. All the necessary network hardware shall be provided by the instrumentation, controls and remote terminal units supplier and shall be mounted in the RTUs.

2.1.2.3 Instrumentation and Vendor Interface

RTU's design shall include but shall not be limited to all interfacing with instrumentation and other Vendor equipment shown on Drawings or described in the Specifications. All the necessary interface hardware shall be provided by the instrumentation, controls and remote terminal units supplier and shall be mounted in the RTUs.

2.1.2.4 Panel Schedule

Tank Site RTU (NOT THIS CONTRACT)
Raw Pump Station RTU (RTU-RW)
Finish Water Pump Station RTU (RTU-FW)
Main Panel at the Water Plant RTU (RTU-WT)
Sludge Thickening RTU (RTU-ST)
ZENON RTU (RTU-CP)

"Paragraph 01500A-1.6.1 is replaced in its entirety with the following."

The Contractor shall provide the Government with an acceptable lockable office, at least 600 square feet in floor space, located where directed within the limits of the project site and providing HVAC, electric lights and power, toilet facilities consisting of at least one lavatory and one water closet complete with connections to water and sewage disposal system, and potable drinking water. The floor plan shall include a minimum of 4 offices, one bathroom, one lockable closet of at least 48 square feet, and a conference area of at least 14 foot by 12 foot. Phone service shall be provided with a minimum of one DSL capable computer line, two separate phone lines. Each office shall be furnished with a standard size desk, chair, work table, 5 drawer file cabinet, trash can, telephone (provide speaker phone for conference area), and wired for computer hook-up to the DSL capable phone line. In addition, the contractor shall provide and maintain a copy machine, in good working order, that has automatic double side and zoom capabilities. Each ingress/egress point shall have steps with handrails and a handrailed landing at least 4 feet by 4 feet. One exterior water hose with a minimum of 4 foot by 4 foot concrete pad shall be provided near the primary entrance for cleaning boots, etc. An access road with adequate parking space for at least 5 vehicles shall be provided. The contractor shall maintain the facility so that all services are in proper working order at all times and provide daily janitorial services to clean the floors, restroom, etc. and remove the trash. Restroom supplies shall be furnished (soap, towels, paper, etc.). This facility shall be installed and fully operational not later than 60 calendar days after NTP.

All utilities, phone, power, water, and sewer shall be furnished at no cost to the Government. At completion of the project, the office shall remain the property of the Contractor and shall be removed from the site. Utilities shall be connected and disconnected in accordance with local codes and to the satisfaction of the Contracting Officer.

SECTION 08600

SKYLIGHTS
11/03

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA STFA-601711	(2001) Surface Treatment and Finishing of Aluminum and Its Alloys (2 Vol.)

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

AAMA 1600	(2000) Voluntary Specification for Skylights
AAMA 2605	(2002) Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels

ASTM INTERNATIONAL (ASTM)

ASTM C 297	(1994; R 1999) Flatwise Tensile Strength of Sandwich Constructions
ASTM D 1002	(2001) Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)
ASTM D 1003	(2000) Haze and Luminous Transmittance of Transparent Plastics
ASTM D 1037	(1999) Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
ASTM D 1929	(1996; R 2001e1) Determining Ignition Temperature of Plastics
ASTM D 2843	(1999) Density of Smoke from the Burning or Decomposition of Plastics
ASTM D 3841	(1997; R 2001) Glass-Fiber-Reinforced Polyester Plastic Panels
ASTM D 572	(1999) Rubber Deterioration by Heat and Oxygen

ASTM D 635	(2003) Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
ASTM E 108	(2000) Fire Tests of Roof Coverings
ASTM E 283	(1991; R 1999) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
ASTM E 330	(2002) Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E 331	(2000) Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E 72	(2002) Conducting Strength Tests of Panels for Building Construction
ASTM E 84	(2003) Surface Burning Characteristics of Building Materials

1.2 GENERAL REQUIREMENTS

The Contractor shall furnish and install commercially available unit skylights domed metal or wood framed skylights which satisfy all requirements contained in this section and have been verified by load testing and independent design analyses to meet specified design requirements. The Contractor shall provide environmentally preferable products and work practices, applicable to skylights, considering raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and/or disposal of the products or services used in the skylights. The skylight system shall be UV-stabilized, shatter proof and energy efficient. The plastics used in the manufacture of the skylights shall be light transmitting plastics for daylighting applications.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Drawings; G,

Drawings showing fabrication details, materials, dimensions, installation methods, anchors, and relationship to adjacent construction.

SD-03 Product Data

Skylights

Manufacturer's descriptive data and catalog cuts.

Warranty

Manufacturer's 5 year complete warranty.

SD-06 Test Reports

Test Reports; G,

Certified test reports from independent testing laboratory for each type and class of panel system. Reports shall verify that the material meets specified performance requirements. Previously completed test reports will be acceptable if they are current and indicative of products used on this project. Where a Class A, B or C roof is part of the project, a listing certificate for roof covering systems category shall be provided certifying that the product complies with the safety standards of ASTM E 108 and the Uniform Building Code.

SD-07 Certificates

Skylights; G,

Manufacturer's certificate stating that products meet or exceed specified requirements. Skylight system shall be evaluated and listed (the whole skylight as a unit, not just a glazing material in the unit) by the recognized building code authorities: ICBO and SBCCI-Public Safety Testing and Evaluation Services Inc. Product ratings determined using NFRC 100 and NFRC 200 shall be authorized for certification and properly labeled by the manufacturer.

Qualifications

Documentation of manufacturer's and installer experience indicating compliance with specified requirements.

1.4 QUALIFICATIONS

The manufacturer shall be a company specializing in the manufacture of the specified products with a minimum of 5 years documented experience. The installer shall have documented experience of 5 years minimum performing the work specified.

1.5 DELIVERY STORAGE AND HANDLING

System modules shall be factory assembled to the greatest extent possible. Panels shall be shipped to the jobsite in rugged shipping units and shall be ready for erection. All skylights shall have conspicuous decals affixed warning individuals against sitting or stepping on the units. Skylight panels shall be stored on the long edge, several inches above the ground, blocked and under cover to prevent warping. Unit skylights shall be delivered in manufacturer's original containers, dry, undamaged, with seals and labels intact. All products shall be delivered, stored and protected in accordance with manufacturer's recommendations.

1.6 WARRANTY

The Contractor shall provide to the Government the manufacturer's complete warranty for materials, workmanship, and installation. The warranty shall be for 5 years from the time of project completion and shall no be prorated. The warranty shall guarantee, but shall not be limited to, the following:

a. Light transmission and color of the panels shall not change after exposure to heat of 300 degrees F for 25 minutes.

b. There is no delamination of the panel affecting appearance, performance, weatherability or structural integrity of the panels or the completed system.

c. There is no fiberbloom on the panel face.

d. Change in light transmission of no more than 6% per ASTM D 1003, and in color (yellowing index) no more than 10 points in comparison to the original specified value over a 10 year period.

PART 2 PRODUCTS

2.1 SKYLIGHT SYSTEMS

The skylight systems shall meet the following requirements:

a. Integral perimeter framing system assembly shall be by the manufacturer.

b. Exterior panel faces shall be crystal in color. Interior panel faces shall be crystal in color.

c. Air infiltration at 6.24 psf shall be less than 0.1 cfm/ft^2 in accordance with ASTM E 283.

d. Water penetration at test pressure of 15 psf shall be zero in accordance with ASTM E 331.

e. Manufacturer shall be responsible for maximum system deflection, in accordance with the applicable building code, and without damage to system performance. Deflection shall be calculated in accordance with engineering principles.

f. Proper weepage elements shall be incorporated within the perimeter framework of the glazing system for drainage of any condensation or water penetration.

g. System shall accommodate movement within the system; movement between the system and perimeter framing components; dynamic loading and release of loads; and deflection of supporting members. This shall be achieved without damage to system or components, deterioration of weather seals and fenestration properties specified.

h. The exterior panel face shall repel an impact of 60 foot-pounds without fracture or tear when impacted by a 3.5 inch diameter, 6.37

pound free falling ball. Impact strength shall be measured by the Society of Plastics Industries (SPI) method.

i. Exposed aluminum color shall be selected from the manufacturer's standard range. Corrosion resistant finish shall be anodized finish complying with AA STFA-601711, in accordance with AAMA 2605.

j. The system shall require no scheduled recoating to maintain its performance or for UV resistance.

k. Design criteria shall be: Wind Load 95 mph; snow load 30 psf.

l. Extruded aluminum shall be 6063-T6 and 6063-T5; all fasteners shall be stainless steel or cadmium plated steel.

2.1.1 Plastic Glazed Unit Skylight

2.1.1.1 Dome

Dome skylights shall be factory assembled units each consisting of a single dome or sealed double domes with a 0.06 inch extruded aluminum frame and 0.06 inch extruded aluminum retainer cap. The skylight shall have an integral condensation gutter with weep hole slots to provide sufficient drainage to the outside. Dome shall be white. For self-flashing domes, the curbs, treated wood nailer, and insulation shall be the manufacturer's standard. Uniform design load capacity of composite dome and frame shall meet or exceed 30 psf snow load. Insulated curbs with PVC thermal barriers connecting the top and bottom of the inner and outer walls are available.

2.2 FLEXIBLE SEALING TAPE

Sealing tape shall be manufacturer's standard pre-applied to closure system at the factory under controlled conditions.

PART 3 EXECUTION

3.1 PREPARATION

The Contractor shall verify when structural support is ready to receive all specified work and to convene a pre-installation conference, if approved by the Contracting Officer, including the Contractor, skylight installer and all parties directly affecting and affected by the specified work. All submitted opening sizes, dimensions and tolerances shall be field verified; preparation of openings shall include isolating dissimilar materials from aluminum system to avoid damage by electrolysis. The installer shall examine area of installation to verify readiness of site conditions and to notify the Contractor about any defects requiring correction. Work shall not commence until conditions are satisfactory.

3.2 ERECTION

Translucent skylight system shall be erected in accordance with the approved shop drawings supplied by the manufacturer. Fastening and sealing shall be in accordance with the manufacturer's shop drawings. All panel protection shall be removed and, after other trades have completed work on adjacent materials, panel installation shall be carefully inspected and adjusted, if

necessary, to ensure proper installation and weather-tight conditions. All staging, lifts and hoists required for the complete installation and field measuring shall be provided. System shall be installed clean of dirt, debris or staining and thoroughly examined for removal of all protective material prior to final inspection of the designated work area.

The purpose of this document is to provide the general contractor with a summary of the equipment and membrane handling and storage requirements, as well as an outline of the commissioning field service representative (FSR) activities on site.

Section 1: Equipment Receiving, Handling and Storage

The following instructions are a general guideline to handling and offloading of equipment. Specific details are dependant on the facilities available to the general contractor (at their disposal) on site. Once shipped to site, the general contractor assumes full responsibility for unloading, handling and storage of the equipment.

1.1 Equipment Receiving and Unloading

- The general contractor is responsible for the prompt unloading of all equipment and materials received into his custody and shall pay any demurrage / wait time resulting from failure to do so. Items of mechanical equipment supplied by ZENON can include pumps, blowers, compressed air equipment, valves, instrumentation, piping, ZW membrane cassettes, membrane support frames as well as other miscellaneous equipment as detailed in the bill of materials.
- The general contractor is responsible for confirmation of the mode of transportation and schedule of equipment deliveries with the ZENON project manager before mobilizing manpower and committing expenses towards unloading and handling the equipment. ZENON will give the general contractor a minimum 24-48 hours notice of incoming deliveries. This will be deemed sufficient time for the general contractor to make necessary arrangements for unloading and handling the equipment. ZENON will make all efforts to give the general contractor as much advance notice as possible.
- The general contractor assumes responsibility for the equipment once unloading has commenced at the job site and must ensure that adequate insurance (Builders All Risk Insurance) for the full replacement value of all ZENON supplied equipment is maintained. It is suggested that ZENON be named as an “Additional Insured” as part of the overall project.

- The general contractor shall check off the materials or equipment received and acknowledge written receipt of all items per supplied bills of lading. The general contractor shall take immediate custody of all materials and equipment received in good condition and shall thereafter be solely responsible for any damage or shortage until final acceptance of the general contractor's work. The damage for which the general contractor will be responsible shall include incidental damage and damage caused by negligence of other general contractors or by any other means. It shall be the general contractor's responsibility alone to obtain settlement of damages caused by others.
- The general contractor shall inspect for defects, damages and shortages of all the equipment upon taking possession, custody or control of the same. Any non-conformance in the equipment shall be immediately reported to the ZENON project manager.
- The equipment delivery will be checked for content and any damage by representatives from ZENON, by the general contractor and the owner's agent (consultant or engineeer). Once the equipment shipment has been checked, a document provided by ZENON as an "Equipment Acceptance Certificate and Checklist" will be completed and signed off by all parties (a copy of this document is provided with the final package). It will remain the responsibility of ZENON to rectify any deficiencies or shortages highlighted. Title to the equipment is passed from the general contractor to the owner upon final inspection of the equipment.
- The general contractor shall replace all materials and equipment that are lost or damaged while in the custody of the general contractor. Replacement materials and equipment shall be of a type and quality equal to the original materials and equipment, shall be acceptable to ZENON and to the owner, and shall be obtained expeditiously to prevent delay of the work. Extensions of time will not be granted for delays caused by failure to receive replacement materials and equipment at the time required for their installation.
- The general contractor shall handle all equipment and materials carefully to prevent damage or loss, shall store them in an orderly manner, shall keep adequate and convenient records of their location, and shall keep a continuously accurate inventory record.

- All handling of ZENON supplied stainless steel spools shall be completed utilizing slings not carbon steel chains so as to avoid any contamination of the stainless steel with carbon steel residue(s).
- The general contractor shall handle and load all returnable packing boxes, special handling devices, membrane cassette crates and cable reels for the materials and equipment. The general contractor shall prepare shipping papers for their return shipment, if required. All such materials shall be returned as promptly as possible.
- If it is necessary to return any materials to ZENON, it is imperative to obtain a "returned goods authorization" (RGA) number prior to shipping. Please contact ZENON for additional information on the necessary procedures.

1.2 Equipment Storage

- The general contractor shall provide all facilities and services required for the storage, maintenance, protection and security of the mechanical equipment and materials delivered by ZENON.
- Equipment and materials shall be stored in assigned lay-down areas.
- Stored equipment and materials shall be adequately supported and protected to prevent damage. Equipment shall be moved into the permanent building or onto its permanent foundation as soon as construction will permit.
- Stored materials and mechanical equipment shall not be allowed to contact the ground. In warehouses that do not have dry concrete or suspended floors, materials, and equipment shall be stored on platforms or shoring.
- Mechanical dehydrators provided in control panels shall be maintained in operation from the date of receipt of equipment until the equipment is fully installed and operational.
- All openings in equipment and piping not stored under weatherproof covers shall be closed to prevent entrance of dirt or moisture during storage.
- All platforms, enclosures, shoring, and weatherproof coverings supplied by the general contractor for storage use shall remain the property of the general contractor and shall be removed upon completion of the work.

- Indoor storage furnished by the general contractor shall consist of suitable construction trailers or portable enclosures and shall be weather-tight, well ventilated, and secure against theft and vandalism. Equipment and materials shall be placed on shoring to permit air circulation under the stored items. Access doors shall be adequate to accommodate the movement and handling of materials and equipment to be stored and shall be equipped with secure locks.
- Except as otherwise specified, the storage method to be used for various materials and mechanical equipment shall be determined as follows:
- Equipment and materials which incorporate electrical components or which have painted surfaces, and other items which would be damaged by outdoor exposure, shall be stored indoors. When such storage would present an unreasonable building space or volume requirement, the equipment or materials may, when acceptable to ZENON and to the owner, be stored under weatherproof coverings on shoring platforms. The coverings shall cover the top and sides of the equipment, shall be lapped to shed water, and shall be fastened securely around the base of the equipment.
- All other equipment and materials shall be stored on open platforms or shoring.
- All rotating equipment must be rotated and maintained while stored as per the provided manufacturers instructions and data sheets for the specific equipment. Note the contractor is responsible for providing appropriate lubricants for rotating mechanical components that comply with manufacturers instructions and data sheets for the specific equipment.
- All storage methods & practices / procedures shall be acceptable to ZENON and to the Owner.

1.3 Equipment Locating and Placement

- The general contractor will establish one set of horizontal and vertical control lines and levels for the equipment. The general contractor shall be responsible for the preservation of all survey reference points as set or established. This forms part of the overall contract documentation and will be as specified by the consultant or engineer to ensure that all elevations for equipment are as per the overall design drawings.

- The general contractor shall lay out the equipment from the aforementioned control lines and levels and shall assume all responsibility for the correctness of the control lines. The general contractor shall supply, establish and maintain at its expense all additional survey reference points, work lines and work levels necessary to perform the work as part of the overall contract specifications.
- The general contractor is responsible for all moving equipment required for the off loading, moving of equipment, and setting of equipment in the proper location. As well as the proper placement, height adjustment, levelling, bolting, and grouting of equipment as shown in the attached drawings and as called out by supplemental information provided by the equipment manufacturer.
- The general contractor is responsible for the design, supply and installation of all anchor bolts, piping and/or equipment supports required for equipment identified in the contract drawings.
- The ZENON supplied stainless steel permeate headers piping must be level to avoid any highpoints where air could collect in the piping system.
- All handling and placement of ZENON supplied stainless steel spools shall be completed utilizing slings not carbon steel chains so as to avoid any contamination of the stainless steel with carbon steel residue(s).
- The general contractor shall ensure that at no time is any grinding, welding or surface polishing of carbon steel equipment allowed to occur near any ZENON supplied stainless steel piping. This is to ensure that ferric contamination is avoided.
- The general contractor is responsible for supplying epoxy grout and polypropylene shims as required to level any supplied equipment skids. Polypropylene shims can be used up to 3/4" height. For tall shims epoxy grout will be used to level the equipment skids. The epoxy grout must be compatible to the floor coating system.
- The general contractor shall also provide engineering, drafting, materials and fabrication as required to properly support all interconnecting piping. The designs of all pipe supports must be in accordance with applicable codes and industry standards and will comply with the consultants or

engineers design details as called out in the contract drawings.

- Inside surfaces of equipment and piping shall be inspected and any rust or foreign matter removed. Care shall be exercised to keep the interior of the piping, tanks and pumps clean during erection and these components shall be inspected before being put into service. Cleaning and flushing of interconnecting piping is the general contractor's responsibility.

Section 2: Membrane Handling and Installation

The general contractor is responsible for providing all necessary equipment for the handling and installation of the membrane cassettes. Given the significant value of this equipment, damage to the membranes will result in costly claims for replacement. No tolerance for work conducted on, near or around the membranes contrary to the information provided in this document is permitted.

2.1 Membrane Shipment

ZENON shall provide a membrane cassettes detailed shipment schedule to the **CONTRACTOR** upon receipt of Approved Shop Drawing Package

To protect against drying out of the membranes due to prolonged storage, these will be shipped separately to the rest of the equipment. The membrane modules will be shipped wrapped in sealed plastic wrapping and must remain sealed in their wrapping until immediately before they are ready for installation. Proper project coordination will be required to ensure membrane installation occurs immediately prior to plant wet testing and/or to wet testing of the tanks. Under no circumstances must the membranes be permitted to remain dry.

The ZeeWeed® membranes are preserved in a glycerin solution. This solution is not meant to protect against freezing conditions but to ensure that the membranes once flushed with water will operate within their design specifications. Ensure that during transport and handling membranes are not exposed to temperatures below **0°C (32°F)**. Winter transportation requires the use of heated trailers.

Each membrane cassette is equipped with a temperature/freeze/heat/tilt indicator that will be inspected by ZENON upon site storage and during installation.

If damage to the membrane cassettes occurs while in control of the **CONTRACTOR**, the **CONTRACTOR** will be responsible for re-crating, shipping back to ZENON and replacing the damaged membrane cassettes at current market value at no cost to ZENON or the OWNER.

2.2 Membrane Handling

Membrane cassettes are shipped in a plywood crate. The cassette itself is sealed in a plastic bag to retain moisture. Crates are not designed to be stacked. Damage incurred during equipment off-loading, needs to be reported to ZENON's project manager immediately.

A ZW500d cassette of 48 elements is packaged in a crate with cassette lying on its side. The dimensions on this crate are:104" Long * 88" Wide * 82" High (2.64 m Long * 2.24 m Wide * 2.08 m High). The weight of this crate is approximately 2800 lb (1270 kg).

2.3 Membrane Storage

In addition to the equipment storage procedures the following storage procedures are specific for the membrane cassettes:

Cassettes must be stored in a sheltered area, protected from freezing, direct sunlight or extreme heat, and sealed as shipped until ready for use. Storage should be in a dark, dry, level area, out of direct sunlight and at a temperature of 0 to 40°C (32 to 104°F). It is recommended that the cassettes not be stored longer than necessary prior to installation. Coordinate with ZENON for appropriate shipment times. Maximum storage duration of a cassette is eight months from the date of shipment.

2.4 Preparation of tanks/feed piping for membrane installation

Inside surfaces of piping shall be inspected and any rust or foreign matter removed. Care shall be exercised to keep the interior of the piping, tanks and pumps clean during erection and these components shall be inspected before being put into service including flushing of all piping at design flow rates and verification of removal of all residual debris from construction. Cleaning and flushing of interconnecting piping will be the Contractor's responsibility.

The membrane tanks must be hydrostatically tested and cleaned to remove all debris larger than the influent screen. On drinking and waste water plants this is 2mm. The most efficient method of cleaning the tank is to flush, drain and use a vacuum truck. Cleaned tanks are to be covered with a continuous plastic barrier protected by plywood sheets.

All piping associated with the plant is to be flushed at design flow rates prior to membrane installation. This includes, but is not limited to feed, blower, permeate, and chemical piping systems.

Ensure that GAC backwash piping is not terminated in the membrane tank. These fines can cause damage to the membrane.

Prevention of debris contamination

It is critical to ensure that no debris capable of damaging membranes enters the ZeeWeed® tank at any time. Possible contamination pathways include:

- Feed water laden with debris;
- Debris being blown or falling into the tank during maintenance or repairs over the membranes;
- Residue from piping or process equipment.

A clean membrane tank needs to be protected from contamination by debris, especially debris larger than 2mm. If debris is allowed to enter the tank, irreversible damage can be caused to the membranes. Examples of common materials that cause damage include (but are not limited to):

- Cable ties;
- Plastic turnings from drilling;
- Pieces of wire;
- Broken measuring tapes;
- Weld slag and metal debris from grinding;
- Twigs;
- Leaves;
- Shells;
- Fish;
- Etc…

To ensure that no construction debris enter the tank after membrane installation, cleaned tanks are to be covered with a continuous plastic barrier protected by plywood sheets. General housekeeping practices are recommended.

2.5 Membrane Installation

A qualified ZENON FSR must supervise all initial membrane installation work, however adequate notice must be provided to schedule site visit. Also, the membrane installation process is not to begin until the site has been deemed ready and suitable inspections by the ZENON FSR and the consultant or engineer have been completed. The inspections will include but are not limited to: confirmation of removal of all foreign debris in the membrane tanks, all process lines and tanks have been flushed and cleaned prior to membrane installation, including blower piping.

Membranes are not to be uncrated if any of the following activities are being completed in the area:

- Painting;
- Roofing;

- Tin work;
- Pipe flushing;
- Grinding,;
- Welding;
- Sandblasting;
- Drilling;
- All power tools that discharge debris (including carpentry);
- Wiring and terminations,

The typical installation of a single cassette requires approximately six man-hours from opening of the crate to being ready to bubble test the membranes. The general membrane installation procedure is as follows.

1. Delivery and off-loading of cassettes,

A separate document detailing the ZW 500D Cassette Uncrating and Installation procedures will be provided prior to Installation.

The cassette crates must be set on a solid level floor area that is free of direct sunlight, not subject to moisture (rain) or extremes of temperature. The crate lids are removable and the interior of the crates are lined with plastic to extend the period of time that they may be stored in this fashion. It is critical that membranes are not allowed to freeze.

2. Assembly of cassette support cages:

Membrane cassette support brackets must be fastened to each cassette as noted. The cassette support brackets and mounting hardware are supplied by ZENON. Wall anchors for the brackets are not included in the ZENON scope of supply. The cassettes are then removed from the crates using the ZENON supplied lifting bracket and an overhead crane or hoist (provided by the Contractor) and are installed into the membrane water treatment tank on the pre-installed support beams / frame assemblies. It is important that the membranes be installed in water within four hours of their removal from the crate.

3. Cassette leveling:

Following installation, the cassettes must be individually leveled to a tolerance of +/- 1/8" per cassette. All cassettes must be within +/- ¼" level tolerance of one another. The cassette support design in the water treatment tank includes adjustable pins to provide fine-tuning of the cassette levels. Use of a laser level is recommended to ensure the required tolerances are achieved.

4. Installation of permeate and air connections:

Once cassette leveling has been verified, the final piping connections must be made.

5. Membrane integrity (bubble) testing:

Bubble testing of the membranes is required to ensure that no damage has occurred to the fibers during the installation and to test the permeate connections that were completed during installation. After the system has been running for a minimum of 24-hours, the water treatment tank is flooded with water to cover all of the cassettes and fitting connections. Oil free compressed air at a minimal fixed pressure as defined by the membrane integrity test procedure is applied to the cassette and the system is inspected for leaks, which are manifested as air bubbles. The ZENON FSR will perform the bubble test and identify any areas of concern to the general contractor. The general contractor is responsible for assisting the ZENON staff with the repair of any identified leaks. Please note that membrane repairs may require a crane to remove and reinstall the affected membrane cassettes.

6. Flushing:

All membrane modules are shipped in a glycerin solution that has a pH of 3.5 to 4.5 to protect the membrane. This solution is not suitable for direct discharge to surface water or drinking water. The general contractor is responsible for disposal of wastewater generated as a result of flushing the membrane after installation. Please note that pending the status of the wastewater plant, dilute glyerine may be processed therein, however, refer to local regulations and guidelines prior to disposition/disposal.

Bill of Materials

The following sections should be read in conjunction with the approved P&ID drawings to furnished with the record drawings. The P&ID's define ZENON's scope of supply and that provided by the General Contractor (by OTHERS) for the Membrane Filtration System.

The main equipment included with the Zenon ZeeWeed® Membrane Filtration System is listed below, along with other major items to be furnished by others.

In case of conflict, P&ID's take precedence for ZENON supplied equipment and devices.

Membrane Aeration Blower System Equipment incl.			Supply by	
Equipment	Tag #	Qty	ZENON	Others
Inlet/Discharge Filter-Silencers	N/A	3	ü	
Inlet Flow Control Valve	HCV-8583	3	ü	
Membrane Aeration Blowers	B-85	3	ü	
Discharge Pressure Gauge c/w Isolation Valve	PI/HV-8540	3	ü	
Discharge Check Valves	CV-8585	3	ü	
Discharge Isolation Valve	HV-8580	3	ü	
Blower Discharge Low Flow Switch	FSL-8506	3	ü	
Other valves & items required but not listed.	Various	Lot		ü

Membrane Tanks & Associated Equipment.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Flocculation Tank Inlet Valve	FV-7068	4		ü
Flocculation Tank	TK-70	4		ü
Flocculation Tank Mixer	MX-7005	4		ü
Flocculation Tank Level Switch	LSL-7003	4	ü	
CIP Solution – Re-circulation Isolation Valve	FV-9760	4	ü	
MIT Air Isolation Valve	HV-3496	4	ü	
MIT – Cassette Isolation Valves	FV-3467 FV-3421	16 16	ü ü	
MIT – Pressure Transmitters	PE/PIT-342[illegible]	4	ü	
Membrane Tank	TK-34	4		ü
Membrane Air Flow Switch	FSH-3405	4	ü	
Cyclic Aeration Valves	FV-3475	4	ü	
ZeeWeed® Membrane Cassettes	ZW500d	16	ü	
Membrane Cassette Support Beams (304 SS) (Anchor Bolts not included)	N/A	28	ü	
Permeate Collection Header Pipes within the Membrane Tanks	N/A	4	ü	
Permeate Header Air Release Valves	FV-3468 AV-3498	4 4	ü ü	
Cassette – Permeate Header Connection Hardware incl. camlock connectors, hoses, hose clamps	N/A	16 Sets	ü	
Permeate Header Cassette Isolation Valve	HV-3466	16	ü	
Membrane Air Scour Header Pipes within the Membrane Tanks	N/A	4	ü	
Air Header Cassette Isolation Valve	HV-3484	4	ü	
Cassette – Air Header Connection Hardware incl. camlock connectors, hoses, hose clamps	N/A	16 Sets	ü	
316SS Fasteners for ZENON supplied header piping (excludes fasteners at points where piping connects to piping that will be supplied By Others)	N/A	Lot	ü	

Membrane Tanks & Associated Equipment.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Membrane Tank Level Switches	LSHH-3401 LSLL-3404 LSLLL-3404	4 4 4	ü ü ü	
Flocculation Tank Drain Valve	HV-7075	4	ü	
Membrane Tank Drain Valve	FV-9761	4	ü	
Reject Line Isolation Valves	HV-3881 HV-3880	4 4	ü ü	
Reject Flow Meter	FE/FIT-382(	4	ü	
Reject Flow Control Valve	FCV-3863	4	ü	
CIP Line Isolation Valves	FV-8160	12	ü	
Other valves & items required but nc listed.	Various	Lot		ü

Permeate Pump System Equipment incl.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Pressure Transmitter c/w Isolation Valve	PE/PIT-3523 HV-3523	4 4	ü ü	
Backpulse Line Isolation Valve	FV-8860	4	ü	
Permeate Line Isolation Valve	FV-3561	4	ü	
Air Separator	TK-35	4	ü	
Air Separator Sight Glass c/w Isolation Valves	LG-3545 HV-3545	4 8	ü ü	
Vacuum Line Air Release Valve	AV-3594	4	ü	
Vacuum Line Isolation Valve	HV-3593	4	ü	
Pump Inlet & Discharge Pressure Gauges & Gauge Cock	PI-3540/3541 HV-3540/3541	4 4	ü ü	
Inlet & Discharge Drain Valves	HV-3586 HV-3587	4 4	ü ü	
Permeate Pump (Including Shelf Spare Permeate Pump)	P-35	5	ü	
Permeate Pump Discharge Check Valve	CV-3585	4	ü	
Permeate Flow Meters	FE/FIT-3520	4	ü	
Permeate Sample Line Isolation Valve	HV-3536	4	ü	
Permeate Discharge Isolation	FV-3580	4	ü	

Permeate Pump System Equipment incl.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Valves				
Other valves & items required but not listed.	Various	Lot		ü

Backpulse Tank/Pumps & Associated Equipment			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Backpulse Tank	TK-88	1	ü	
Backpulse Tank Air Vent Filter	F-88	1	ü	
Backpulse Tank Overflow Check Valve	CV-8886	1	ü	
Backpulse Tank Drain Valve	HV-8895	1	ü	
Backpulse Tank Strainer	STR-8880	1	ü	
Permeate Inlet Isolation Valve	FV-8870	1	ü	
Potable Water Isolation Valve	HV-8890	1		ü
Level Transmitter c/w Isolation Valve	LE/LIT-8826 HV-8826	1 1	ü ü	
Backpulse Pump Inlet and Discharge Isolation Valves	HV-8881 HV-8880	2 2	ü ü	
Inlet & Discharge Pressure Indicators c/w Isolation Valves	HV/PI-8841 HV/PI-8840	2 2	ü ü	
Backpulse Pumps	P-88	2	ü	
Backpulse Pump Discharge Check Valves	CV-8885	2	ü	
Backpulse Pressure Switches	PSHH-8807	1	ü	
Discharge Line Drain Valve	HV-8887	1	ü	
Backpulse Flow Meter	FE/FIT-8820	1	ü	
Other valves & items required but not listed.	Various	Lot		ü

CIP Tank/Pump & Associated Equipment			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
CIP Tank Fill Isolation Valve	FV-8170	1	ü	
Plant Service Water Isolation Valve	HV-8190	1		ü
CIP Tank Heater	TSH-8109	1	ü	

CIP Tank/Pump & Associated Equipment			Supply by	
Equipment	Tag #	Qty	ZENON	Others
CIP Tank	TK-81	1	ü	
CIP Tank Air Vent Filter	F-81	1	ü	
Backpulse Tank Overflow Check Valve	CV-8186	1	ü	
Backpulse Tank Drain Valve	HV-8195	1	ü	
Backpulse Tank Strainer	STR-81	1	ü	
Level Transmitter c/w Isolation Valve	LE/LIT-8126 HV-8126	1 1	ü ü	
Temperature Indicator	TE/TIT-8130	1	ü	
CIP Tank Discharge Isolation Valve	FV-8164	1	ü	
Maintenance Clean Line Isolation Valve	FV-8869	1	ü	
Inlet & Discharge Pressure Indicators c/w Isolation Valves	HV/PI-8141 HV/PI-8140	1 1	ü ü	
CIP Pump	P-81	1	ü	
CIP Pump Discharge Check Valves	CV-8185	1	ü	
CIP Pump Discharge Isolation Valve	HV-8180	1	ü	
Discharge Line Drain Valve	HV-8187	1	ü	
Backpulse Pressure Switch c/w Isolation Valve	PSHH-8107 HV-8107	1 1	ü ü	
Backpulse Flow Meter	FE/FIT-8120	1	ü	
Sodium Hypochlorite Recovery Clean Isolation Valves	HV-6696 CV-6685 HV-6698	1 1 1	ü ü ü	
Sodium Hypochlorite Maintenance Clean Isolation Valves	HV-5196 CV-5185 FV-5160	1 1 1	ü ü ü	
MC-1 Recovery Clean Isolation Valves	HV-6596 CV-6585 HV-6598	1 1 1	ü ü ü	
Other valves & items required but not listed.	Various	Lot		ü

Vacuum Pumps & Associated Equipment			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Liquid Reservoir Inlet Isolation Valve	FV-9265A	1	ü	
Vent Isolation Valve	FV-9265B	1	ü	
Liquid Reservoir & Associated Equipment	TK-92 CV-9295 LSH-9202	1 1 1	ü ü ü	
Pressure Indicator c/w Isolation Valve	PI/HV-9241	1	ü	
Vacuum Pump Inlet Isolation Valve	FV-9261	3	ü	
Vacuum Pumps	P-92	3	ü	
Other valves & items required but nc listed.	Various	Lot		ü

CIP Neutralization Pump & Associated Equipment			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
CIP-Drain Pump Inlet and Discharge Isolation Valves	HV-9781 HV-9780	1 1	ü ü	
Inlet & Discharge Pressure Indicators	HV/PI-9741 HV/PI-9740	1 1	ü ü	
Inlet & Discharge Pressure Switch c/w Isolation Valves	HV/PSL-9708 HV/PSH-9707	1 1	ü ü	
WAS Pump	P-38	2	ü	
WAS Pump Discharge Check Valves	CV-9785	2	ü	
Residual Chlorine Analyzer c/w Isolation Valve	AE/AIT-9734 HV-9734 FV-9734	1 1 1	ü ü ü	
pH Analyzer c/w Isolation Valve	AE/AIT-9732 HV-9732	1 1	ü ü	
Sodium Hydroxide Isolation Valves	HV-5596 CV-5585 HV-5598	1 1 1	ü ü ü	
Sodium Bisulfite Isolation Valves	HV-5396 CV-5385 HV-5398	1 1 1	ü ü ü	
Potable Water Inlet Isolation Valve	FV-7564	1	ü	

CIP Neutralization Pump & Associated Equipment			Supply by	
Equipment	Tag #	Qty	ZENON	Others
Discharge to Sludge Thickener Isolation Valve	FV-9777	1		ü
Other valves & items required but not listed.	Various	Lot		ü

Cleaning Chemical Systems			Supply by	
Equipment	Tag #	Qty	ZENON	Others
Other valves & items required but not listed.	Various	Lot		ü

Air Compressors and Associated Equipment incl.			Supply by	
Equipment	Tag #	Qty	ZENON	Others
Air Receivers	TK-91	2	ü	
Air Compressors	AC-91	2	ü	
Pressure Safety Valve	PSV-9182	2	ü	
Automatic Drain Valve	FV-9165	2	ü	
Low Pressure Switch	PSL-9100	2	ü	
Pressure Indicator	PI-9140	2	ü	
Discharge Isolation Valve	HV-9180	2	ü	
Refrigerated Air Drier c/w Auto Drain	DR-9182	1	ü	
MIT Line Isolation Valves	HV-9581 HV-9580	1 1	ü ü	
MIT Line Filter	F-95	1	ü	
MIT Line Pressure Regulator Valve	PRV-9583	1	ü	
MIT Line Pressure Indicator c/w Isolation Valve	HV/PI-9541	1	ü	
MIT Line Pressure Relief Valve	PSV-9582	1	ü	
MIT Line Check Valve	CV-9585	1	ü	
Air Diaphragm Pump Line Low Pressure Switch	PSL-9107 PSL-9108	1 1	ü ü	
Air Diaphragm Pump Line Pressure Regulator Valves	PRV-9183	4	ü	

Air Compressors and Associated Equipment incl.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Air Diaphragm Pump Line Distribution Valves	HV-9188	4	ü	
Cyclic Valve Line Pressure Regulator Valve	PRV-9194	1	ü	
Cyclic Valve Line Low Pressure Switch	PSL-9109	1	ü	
Distribution Valves	HV-9197	4	ü	
Other valves & items required but not listed.	Various	Lot		ü

Clearwell and Associated Equipment incl.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Sodium Hypochlorite Injection for BP Tank Isolation Valves	HV-5196 CV-5185 FV-5160	1 1 1	ü ü ü	
Backpulse Tank Fill Isolation Valve	HV-7580	1		ü
Backpulse Tank Fill Check Valve	CV-7585	1	ü	
Temperature	TE/TIT-7530	1	ü	
Turbidimeter c/w Isolation Valve	HV/AE/AIT-7537	1	ü	
Vacuum Breaker	N/A	1		ü
Clearwell Level Transmitter	LE/LIT-7526	1		ü
Other valves & items required but not listed.	Various	Lot		ü

Turbidimeter			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
Inlet Check Valve	CV-3536	4	ü	
Turbidimeter Inlet Isolation Valve	FV-3536	4	ü	
Turbidimeter	AE/AIT-3537	4	ü	
Other valves & items required but not listed.	Various	Lot		ü

Control System Equipment incl.			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**Others**
PLC system c/w HMI for equipment integral to the ZeeWeed® Membrane Filtration System. PLC System shall be Allen Bradley Control Logix with remote stations. Main PLC Enclosure, NEMA 12 Remote Stations (1 per 2 trains), NEMA 4X.	n/a	 1 2	 ü ü	
Shelf Spare PLC	n/a	1	ü	
Equipment Junction Boxes	n/a	Lot		ü
Motor Control Center & VFDs	n/a	1		ü
IFIX SCADA System	n/a	1		ü

General	Supply by	
	ZENON	**Others**
Equipment General Arrangement and Layout Drawings	ü	
Operating & Maintenance Manuals	ü	
Field Service	ü	
Equipment delivery F.C.A. Project Site	ü	

Miscellaneous Items			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**HUA P&ID**
pH analyzer	PH-7735	1	ü	3
Turbidity Analyzer	T-7737	1	ü	3
20" Insertable Averaging Mag Meter	MM-7320A/B	2	ü	4
18" Mud Valve w/actuator/floor stand/flanged/non-rising stem	FV-7068	4	ü	4
8" Mud Valve w/actuator/floor stand/flanged/non-rising stem	FV-7069	4	ü	4
10" Mud Valve w/actuator/floor stand/flanged/non-rising stem	FV-3465	4	ü	5
6" BFV manual	HV-3881	4	ü	5
12" mag in lieu of 10"	FE/FIT-3520	4	ü	6

Miscellaneous Items			Supply by	
Equipment	**Tag #**	**Qty**	**ZENON**	**HUA P&ID**
20" FCV Electric	FCV-7563	1	ü	7
12" BFV w/actuator	FV-7565	4	ü	7
16" BFV w/actuator	FV-7566	4	ü	7
10" BFV manual	HV-7580	1	ü	7
6" BFV manual	HV-7583	4	ü	7
4" combination Vacuum/Air Release valve	VAR-75	1	ü	7
20" Flow tube Mag Meter	FE/FIT-7520	1	ü	7
Total Chlorine Meter	CLAA-7935	1	ü	8
36" Insertable Averaging Mag Meter	FE/FIT-7920A/B	2	ü	8
Pressure Transmitter	PR/PIT-7942	1	ü	8
pH analyzer	PH-7532 PH-7832	1 1	ü ü	9 9
Turbidity Analyzer	T-7837	1	ü	9
Chlorine Residual Analyzer	CL-7534 CL-7834 CL-7934	1 1 1	ü ü ü	9 9 9
Fluoride Analyzer	FL-7938	1	ü	9
Streaming Current Monitor	SCM-7035	1	ü	9
4" BFV manual	HV-8890	1	ü	14
4" BFV manual	HV-8190	1	ü	15
Membrane Train Tank Grating	N/A	LOT	ü	N/A
Header Pipe Supports	N/A	LOT	ü	N/A

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS FOR PROCUREMENT CONTRACTS

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE
and

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Professional Engineers in Private Practice

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EJCDC No. P-700 (2000 Edition)

These Standard General Conditions For Procurement Contracts have been prepared for use with the Suggested Instructions to Bidders For Procurement Contracts (EJCDC No. P-200 2000 Edition), the Suggested Form of Agreement Between Buyer and Seller For Procurement Contracts (EJCDC No. P520, 2000 Edition), and the Guide to Preparation of Supplementary Conditions For Procurement Contracts (EJCDC No. P-800, 2000 Edition). Their provisions are interrelated and a change in one may necessitate a change in the others. Additional information concerning the use of the EJCDC Procurement Documents may be found in the Commentary on Procurement Documents (EJCDC No. P-001).

NOTE:

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ZEEWEED® MEMBRANE FILTRATION SYSTEM EQUIPMENT

GENERAL CONDITIONS

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Whenever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to the singular or plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Those written or graphic instruments issued prior to the opening of Bids in accordance with the Bidding Requirements which clarify or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument signed by both Buyer and Seller covering the Goods and Special Services and which lists the Contract Documents in existence on the Effective Date of the Agreement.

3. *Application for Payment*--The form acceptable to Buyer which is used by Seller in requesting progress and final payments and which is accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*--An offer or proposal submitted on the prescribed form setting forth the prices for the Goods and Special Services to be provided.

5. *Bidder*--A person who submits a Bid directly to Buyer.

6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Form of Bid security, if any, and Bid Form with any supplements.

8. *Buyer*--The person or public entity purchasing the Goods and Special Services.

9. *Change Order*--A document recommended by Engineer which is signed by Seller and Buyer and authorizes an addition, deletion, or revision to the Contract Documents or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A written demand or assertion by Buyer or Seller seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract.

11. *Contract*--The entire and integrated written agreement between Buyer and Seller concerning the Goods and Special Services. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--Those items listed in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Files in electronic media format of text, data, graphics, and the like are not Contract Documents, and may not be relied on by Seller. Approved Shop Drawings and other Seller's submittals are not Contract Documents.

13. *Contract Price*-- The moneys payable by Buyer to Seller for furnishing the Goods and Special Services in accordance with the Contract Documents as stated in the Agreement.

14. *Contract Times*--The times stated in the Agreement by which the Goods must be delivered and Special Services must be furnished.

15. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, intent, and character of the Goods and Special Services to be furnished by Seller.

16. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

17. *Engineer*--The person designated as such in the Agreement.

18. *Field Order*--A written order issued by Engineer which requires minor changes in the Goods or Special Services but which does not involve a change in the Contract Price or Contract Times.

19. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

20. *Goods*--The tangible and movable personal property that is described in the Contract Documents, regardless of whether the property is to be later attached to realty.

21. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances,

codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

22. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to the Contract Times.

23. *Notice of Award*--The written notice by Buyer to the apparent Successful Bidder stating that upon timely compliance by the apparent Successful Bidder with the conditions precedent listed therein, Buyer will sign and deliver the Agreement.

24. *Notice to Proceed*-- A written notice given by Buyer to Seller fixing the date on which the Contract Times commence to run and on which Seller shall start to perform under the Contract.

25. *Point of Destination* --The specific address of the location where delivery of the Goods shall be made as stated in the Agreement.

26. *Project*--The total undertaking of which the Goods and Special Services to be provided under the Contract are a part.

27. *Project Manual*--The bound documentary information prepared for bidding and furnishing the Goods and Special Services. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

28. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Goods and which establish the standards by which such portion of the Goods or Special Services will be judged.

29. *Seller*--The person furnishing the Goods and Special Services.

30. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Seller and submitted by Seller to illustrate some portion of the Goods or Special Services.

31. *Special Services*--Services associated with the Goods to be furnished by Seller as required by the Contract Documents.

32. *Specifications*--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards and workmanship as applied to the furnishing of the Goods and Special Services, and certain administrative details applicable thereto.

33. *Successful Bidder*--The lowest responsible Bidder submitting a responsive Bid, to whom Buyer makes an award.

34. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

35. *Written Amendment*--A written statement modifying the Contract Documents, signed by Buyer and Seller on or after the Effective Date of the Agreement and normally dealing with the administrative aspects of the Contract Documents.

1.02 Terminology

A. *Intent of Certain Terms or Adjectives*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Goods or Special Services. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Goods or Special Services for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing of Goods or Special Services or any duty or authority to undertake responsibility contrary to any other provision of the Contract Documents.

2. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

3. The word "non-conforming" when modifying the words "Goods" or "Special Services", refers to Goods or Special Services that fail to conform to the Contract Documents.

4. The word "receipt" when referring to the Goods, shall mean the physical taking and possession by the Buyer under the conditions specified in Paragraph 8.01.B.3.

B. *Day*

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. When Seller delivers the executed Agreements to Buyer, Seller also shall deliver such bonds as Seller may be required to furnish.

2.02 Copies of Documents

A. Buyer shall furnish Seller up to five copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Designated Representatives

A. Buyer and Seller shall each designate its representative at the time the Agreement is signed. Each representative shall have full authority to act on behalf of and make binding decisions in any matter arising out of or relating to the Contract.

2.05 Before Starting Fabrication/Assembly of Goods

A. *Seller's Review of Contract Documents:* Before commencing performance of the Contract, Seller shall carefully study and compare the Contract Documents and check and verify pertinent requirements therein and, if specified, all applicable field measurements. Seller shall promptly report in writing to Buyer and Engineer any conflict, error, ambiguity or discrepancy which Seller may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any work affected thereby.

2.06 Progress Schedule

A. Within 15 days after the Contract Times start to run, Seller shall submit to Buyer and Engineer an acceptable progress schedule of activities, including at a minimum, Shop Drawing and Sample submittals, tests, and deliveries as required by the Contract Documents. No progress payment will be made to Seller until an acceptable schedule is submitted to Buyer and Engineer.

B. The progress schedule will be acceptable to Buyer and Engineer if it provides an orderly progression of the submittals, tests, and deliveries to completion within the specified Milestones and the Contract Times. Such acceptance will not impose on Buyer or Engineer responsibility for the progress schedule, for sequencing, scheduling, or progress of the work nor interfere with or relieve Seller from Seller's full responsibility therefor. Such acceptance shall not be deemed to acknowledge the reasonableness and attainability of the schedule.

2.07 Preliminary Conference

A. Within 20 days after the Contract Times start to run, a conference attended by Seller, Buyer, Engineer and others as appropriate will be held to establish a working understanding among the parties as to the Goods and Special Services and to discuss the schedule referred to in Paragraph 2.06.A., procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT AND AMENDING

3.01 Intent

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided, whether or not specifically called for, at no additional cost to Buyer.

C. Clarifications and interpretations of, or notifications of minor variations and deviations in, the Contract Documents, will be issued by Engineer as provided in Article 9.

3.02 Laws and Regulations, Standards, Specifications and Codes

A. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws and Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws and Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

B. No provision of any such standard, specification, manual or code, or any instruction of a supplier shall be effective to change the duties or responsibilities of Buyer or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be

effective to assign to Buyer or Engineer, or any of their consultants, agents, or employees any duty or authority to supervise or direct the performance of Seller's obligations or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. *Reporting Discrepancies:* If, during the performance of the Contract, Seller discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Contract or of any standard, specification, manual or code, or of any instruction of any supplier, Seller shall promptly report it to Buyer in writing for Engineer's review. Seller shall not proceed with the furnishing of the Goods or Special Services affected thereby until an amendment to or clarification of the Contract Documents has been issued. Seller shall not be liable to Buyer or Engineer for failure to report any such conflict, error, ambiguity, or discrepancy unless Seller knew or reasonably should have known thereof.

B. *Resolving Discrepancies:* Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

1. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

2. the provisions of any Laws or Regulations applicable to the furnishing of the Goods and Special Services (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Amending and Clarifying Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions to the Goods or Special Services or to modify the terms and conditions thereof by a Written Amendment or a Change Order.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Goods or Special Services not affecting Contract Price or Contract Times may be authorized, by one or more of the following ways: 1) a Field Order; 2) Engineer's approval of a Shop Drawing pursuant to Paragraph 5.06.D.2; or 3) Engineer's written interpretation or clarification.

ARTICLE 4 - BONDS AND INSURANCE

4.01 Bonds

A. Seller shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price, to Buyer. The bonds shall be delivered in accordance with Paragraph 2.01 and shall remain in effect at least one year after the date final payment is due, except as provided otherwise by Laws or Regulations.

B. The bonds shall be issued in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations and shall be executed by a surety named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on a bond is declared bankrupt or becomes insolvent or its right to do business is terminated in the state where the Project is located or it ceases to meet the requirements of Paragraph 4.01.B, Seller shall provide another bond and surety which comply with those requirements within 20 days, at Seller's expense.

4.02 Insurance

A. Seller shall provide insurance of the types and coverages and in the amounts stipulated in the Supplementary Conditions.

ARTICLE 5 - SELLER'S RESPONSIBILITIES

5.01 Supervision and Superintendence

A. Seller shall be solely responsible for the means, methods, techniques, sequences, and procedures used in performing its obligations. Seller shall be responsible to see that the completed Goods and Special Services conform to the Contract Documents.

5.02 Labor, *Materials* and Equipment

A. Seller shall provide competent, qualified and trained personnel in all aspects of its performance of the Contract.

B. All equipment, products and material incorporated into the Goods shall be as specified, or if not specified, shall be new, of good quality and protected, assembled, used, connected, applied, cleaned and conditioned in accordance with the original manufacturer's instructions, except as otherwise may be provided in the Contract Documents.

5.03 Compliance with Laws and Regulations, Standards, Specifications and Codes

A. Seller shall comply with all Laws and Regulations applicable to the furnishing of the Goods and Special Services.

5.04 Or *Equals*

A. Whenever an item of material or equipment to be incorporated into the Goods is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier or manufacturer, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item is permitted, other items of material or equipment or material or equipment of other suppliers or manufacturers may be submitted to Buyer for Engineer's review.

1. If in Engineer's sole discretion, such an item of material or equipment proposed by Seller is functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an "or-equal" item.

2. For the purposes of this paragraph, a proposed item of material or equipment may be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment, Engineer determines that: 1) it is at least equal in quality, durability, appearance, strength, and design characteristics; and 2) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole; and

b. Seller certifies that: 1) there is no increase in any cost including capital, installation or operating to Buyer; and 2) the proposed item will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

B. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraph 5.04.A. Engineer will be the sole judge of acceptability. No "or-equal" will be ordered, manufactured or utilized until Engineer's review is complete, which will be evidenced by an approved Shop Drawing. Engineer will advise Buyer and Seller in writing of any negative determination. Notwithstanding Engineer's approval of an "or-equal" item, Seller shall remain obligated to comply with the requirements of the Contract Documents.

C. *Special Guarantee:* Buyer may require Seller to furnish at Seller's expense a special performance guarantee or other surety with respect to any such proposed "or-equal."

D. *Data:* Seller shall provide all data in support of any such proposed "or-equal" at Seller's expense.

5.05 Taxes

A. Seller shall be responsible for all taxes and duties arising out of the sale of the Goods and the furnishing of Special Services. All taxes are included in the Contract Price.

5.06 Shop Drawings and Samples

A. Seller shall submit Shop Drawings and Samples to Buyer for Engineer's review and approval in accordance with the schedule required in Paragraph 2.06.A. All submittals will be identified as required and furnished in the number of copies specified in the Contract Documents. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Seller proposes to provide.

B. Where a Shop Drawing or Sample is required by the Contract Documents, any related work performed prior to Engineer's approval of the pertinent submittal will be at the sole expense and responsibility of Seller.

C. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, Seller shall have determined and verified:

a. all field measurements (if required), quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto; and

b. that all materials are suitable with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the furnishing of Goods and Special Services.

2. Seller shall also have reviewed and coordinated each Shop Drawing or Sample with the Contract Documents.

3. Each submittal shall include a written certification from Seller that Seller has reviewed the subject submittal and confirmed that it is in compliance with the requirements of the Contract Documents. Both Buyer and Engineer shall be entitled to rely on such certification from Seller.

4. With each submittal, Seller shall give Buyer and Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both in a written communication separate from the submittal and by specific notation on each Shop Drawing or Sample.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples.

2. Engineer's approval of Shop Drawings or Samples will be subject to the standard of Paragraph 1.02.A.1. Engineer's approval will not relieve Seller from responsibility for any variation from the requirements of the Contract Documents unless Seller has in writing called Engineer's attention to each such variation at the time of each submittal as required by Paragraph 5.06.C.1. and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval.

E. Resubmittal Procedures

1. Seller shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. Seller shall direct specific attention in writing to any revisions other than the corrections called for by Engineer on previous submittals.

5.07 Continuing Performance

A. Seller shall adhere to the progress schedule established in accordance with Paragraph 2.06.A., and the Goods shall be delivered and the Special Services furnished within the Contract Times specified in the Agreement.

B. Seller shall carry on the work and adhere to the progress schedule during all disputes or disagreements with Buyer. No work shall be delayed or postponed pending resolution of any disputes or disagreements.

5.08 Seller's Warranties and Guarantees

A. Seller warrants and guarantees to Buyer that the title to the Goods conveyed shall be proper, its transfer rightful, and free from any security interest, lien, or other encumbrance.

B. Seller warrants and guarantees to Buyer that all Goods and Special Services will conform with the Contract Documents, including any Samples approved by Engineer, and the Goods will be of merchantable quality. Engineer shall be entitled to rely on representation of Seller's warranty and guarantee.

C. Seller's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, improper modification or improper maintenance or operation by persons other than Seller, or

2. normal wear and tear under normal usage.

D. Seller's obligation to furnish the Goods and Special Services in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Goods or Special Services that are non-conforming, or a release of Seller's obligation to furnish the Goods and Special Services in accordance with the Contract Documents:

1. observations by Buyer or Engineer;

2. recommendation by Engineer or payment by Buyer of any progress or final payment;

3. use of the Goods by Buyer;

4. any acceptance by Buyer (subject to the provisions of Paragraph 8.02.D.1) or any failure to do so;

5. the issuance of a notice of acceptance by Buyer pursuant to the provisions of Article 8;

6. any inspection, test or approval by others; or

7. any correction of non-conforming Goods or Special Services by Buyer.

E. Buyer shall within a reasonable time notify Seller of any breach of Seller's warranties or guarantees. If Buyer receives notice of a suit or claim as a result of such breach, Buyer also may give Seller notice in writing to defend such suit or claim. If Seller fails to defend such suit or claim, Seller will be bound in any subsequent suit or claim against Seller by Buyer by any factual determination in the prior suit.

5.09 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, and their officers, directors, shareholders, partners, employees, agents, consultants, contractors and subcontractors from any and all claims, costs, losses, and demands or judgments for damages for claims (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or relating to a negligent act or omission or the breach of any obligation under this Contract by Seller, or its officers, directors, shareholders, partners, employees, agents, consultants, contractors or subcontractors, or anyone for whom Seller is responsible, provided that any such claim, cost, loss, or damage;

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Goods or Special Services themselves), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of Seller or any individual or entity directly or indirectly employed to furnish any of the Goods or Special Services or anyone for whose acts Seller may be liable, regardless of whether or not caused in part by any

negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.

B. The indemnification obligations of Seller under paragraph 5.09.A shall not extend to the liability of Engineer and Engineer's consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

ARTICLE 6 - SHIPPING AND DELIVERY

6.01 Shipping

A. Seller shall select the carrier and bear all costs of packaging, transportation, insurance, special handling and any other costs associated with shipment and delivery.

6.02 Delivery

A. Seller shall deliver the Goods F.O.B. the Point of Destination in accordance with the Contract Times set forth in the Agreement, or other date agreed to by Buyer and Seller.

B. Seller shall provide written notice to Buyer at least 15 days before shipment of the manner of shipment and the anticipated delivery date. The notice shall also include any instructions concerning special equipment or services required at the Point of Destination to unload and care for the Goods. Seller shall also require the carrier to give Buyer at least 24 hours notice by telephone prior to the anticipated hour of delivery.

C. Buyer will be responsible and bear all costs for unloading the Goods from carrier.

D. Buyer will assure that adequate facilities are available to receive delivery of the Goods during the Contract Times set forth in the Agreement, or another date agreed by Buyer and Seller.

E. No partial deliveries shall be allowed, unless permitted or required by the Contract Documents or agreed to in writing by Buyer.

6.03 Risk of Loss

A. Risk of loss and insurable interests transfer from Seller to Buyer upon Buyer's receipt of the Goods.

B. Notwithstanding the provisions of Paragraph 6.03.A, if Buyer rejects the Goods as non-conforming, the risk of loss on such Goods shall remain with Seller until Seller corrects the non-conformity or Buyer accepts the Goods.

ARTICLE 7 - CHANGES: SCHEDULE AND DELAY

7.01 Changes in the Goods and Special Services

A. Buyer may at any time, without notice to any surety, make changes in the Contract Documents within the general scope of the Contract.

B. If any such change or action by Buyer affects the Contract Price or Contract Times, Seller shall notify Buyer within 15 days after the occurrence of the event giving rise thereto, and written supporting data will be submitted to Buyer within 45 days after such occurrence. If Seller fails to do so, Seller waives any Claim for such adjustment.

C. Seller shall not suspend performance while Buyer and Seller are in the process of making such changes and any related adjustments.

7.02 Changes in Laws and Regulations

A. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of furnishing the Goods and Special Services shall be the subject of an adjustment in Contract Price or Contract Times. If Buyer and Seller are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 9.06.A.

7.03 Changing *Contract* Price or Contract Times

A. The Contract Price or Contract Times may only be changed by:

1. a Change Order;

2. a Written Amendment; or

3. a written unilateral order of Buyer, in which case Seller shall be entitled to an equitable adjustment in Contract Price or Contract Times for any reasonable and necessary costs or delays incurred by Seller to accommodate such a change.

B. If Seller is prevented from delivering the Goods or performing the Special Services within the Contract Times for any unforeseen reason beyond its control and not attributable to its actions or inactions, then Seller shall be entitled to an adjustment of the Contract Times to the extent attributable to such reason. Such reasons include fire, floods, epidemics, abnormal weather conditions, acts of God, acts of war, directions by government authority, and other like matters. If such an event occurs and delays

Seller's performance, Seller shall notify Buyer in writing within 15 days of the beginning of the event causing the delay, stating the reason therefor.

C. Contract Times will not be modified for delays within the control of Seller, including labor strife, transportation shortages or delays at Seller's facilities. Delays attributable to and within the control of Seller's subcontractors or suppliers shall be deemed to be delays within the control of Seller.

D. If Seller is prevented from delivering the Goods or furnishing the Special Services within the Contract Times due to the actions or inactions of Buyer, Seller shall be entitled to any reasonable and necessary additional costs arising out of such delay to the extent directly attributable to Buyer.

E. Neither Buyer nor Seller shall be entitled to any damages arising from delays which are beyond the control of both Buyer and Seller, including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, acts of war, direction by government authority, and other like matters.

ARTICLE 8 - BUYER'S RIGHTS

8.01 Inspections and Testing

A. General

1. Buyer shall have the right to perform, or cause to be performed, reasonable inspections and require reasonable tests of the Goods at Seller's facility, and at the Point of Destination. Seller shall allow Buyer a reasonable time to perform such inspections or tests.

2. Seller shall bear all expenses, except for travel, lodging and subsistence expenses of Buyer's representatives, for inspections and tests at Seller's facility, but Buyer shall be entitled to reimbursement from Seller of travel, lodging and subsistence expenses of Buyer's representatives if the Goods are non-conforming.

3. Buyer shall bear all expenses, except for travel, lodging and subsistence expenses of Seller's representatives, for inspections and tests at the Point of Destination, but Buyer shall be entitled to reimbursement from Seller for Buyer's expenses for reinspection or retesting if, on the basis of an initial inspection or testing, the Goods are determined to be non-conforming.

4. Seller shall provide Buyer 30 days written notice of the readiness of the Goods for all inspections, tests, or approvals which the Contract Documents specify are to be observed by Buyer prior to shipment.

5. Buyer will give Seller timely notice of all specified tests, inspections and approvals of the Goods which are to be conducted at the Point of Destination.

6. If, on the basis of any inspections or testing, the Goods appear to be conforming, Buyer will give Seller prompt notice thereof. If on the basis of said inspections or testing, the Goods appear to be non-conforming, Buyer will give Seller prompt notice thereof and will advise Seller of the remedy Buyer elects under the provisions of Paragraph 8.02.

7. Neither payments made by Buyer to Seller prior to any tests or inspections, nor any tests or inspections shall constitute acceptance of non-conforming Goods, or prejudice Buyer's rights under the Contract.

B. Inspection on Delivery

1. Buyer or Engineer will inspect the Goods upon delivery solely for purposes of identifying the Goods and general verification of quantities and observation of apparent condition in order to provide a basis for a progress payment. Such inspection will not be construed as final or as receipt of any Goods and Special Services that, as a result of subsequent inspections and tests, are determined to be non-conforming.

2. Within ten days of such inspection, Buyer shall provide Seller with written notice of Buyer's determination regarding conformity of the Goods. In the event Buyer does not provide such notice, it will be presumed that the Goods appear to be conforming.

3. If, on the basis of the inspection specified in Paragraph 8.01.B.1, the Goods appear to be conforming, Buyer's notice thereof to Seller will acknowledge receipt of the Goods.

C. Final Inspection

1. After all of the Goods have been incorporated into the Project, tested in accordance with such testing requirements as are specified, and are functioning as intended, Buyer or Engineer will make a final inspection.

2. If, on the basis of the final inspection, the Goods are conforming, Buyer's notice thereof will constitute Buyer's acceptance of the Goods.

3. If, on the basis of the final inspection, the Goods are non-conforming, Buyer will identify the non-conformity in writing.

8.02 Non-Conforming Goods or Special Services

A. If, on the basis of inspections and testing prior to delivery, the Goods appear to be non-conforming, or if at any time after Buyer has acknowledged receipt of delivery and before the expiration of the correction period described in Paragraph 8.03, Buyer determines that the Goods are non-conforming, Seller shall promptly, without cost to Buyer and in response to written instructions from Buyer, either

correct such non-conforming Goods, or, if rejected by Buyer, remove and replace the non-conforming Goods with conforming Goods, including all work required for reinstallation.

B. Buyer's Rejection of Non-Conforming Goods

1. If Buyer elects to reject the Goods in whole or in part, Buyer's notice to Seller will describe in sufficient detail the non-conforming aspect of the Goods. If Goods have been delivered to Buyer, Seller shall promptly, and within the Contract Times, remove and replace the rejected Goods.

2. Seller shall bear all costs, losses and damages attributable to the removal and replacement of the non-conforming Goods as provided in Paragraph 8.02.E.

3. Upon rejection of the Goods, Buyer retains a security interest in the Goods or to the extent of any payments made and expenses incurred in their testing and inspection.

C. Remedying Non-Conforming Goods or Special Services

1. If Buyer elects to permit the Seller to modify the Goods to remove the non-conformance, Seller shall promptly provide a schedule for such modifications and shall make the Goods conforming within a reasonable time.

2. If Buyer notifies Seller in writing that any of the Special Services are non-conforming, Seller shall promptly provide conforming services acceptable to Buyer. If Seller fails to do so, Buyer may delete the Special Services and reduce the Contract Price a commensurate amount.

D. Buyer's Acceptance of Non-Conforming Goods

1. Instead of requiring correction or removal and replacement of non-conforming Goods discovered either before or after final payment, Buyer may accept the non-conforming Goods. Seller shall bear all costs, losses, and damages attributable to Buyer's evaluation of and determination to accept such non-conforming Goods as provided in Paragraph 8.02.E.

E. Seller shall pay all claims, costs, losses, and damages, including but not limited to all fees and charges for re-inspection, retesting and for any engineers, architects, attorneys and other professionals, and all court or arbitration or other dispute resolution costs arising out of or relating to the non-conforming Goods or Special Services, including the correction or removal and replacement of the non-conforming Goods and the replacement of property of Buyer and others destroyed by the correction or removal and replacement of the non-conforming Goods, or the obtaining of conforming Special Services from others.

8.03 Correction Period

A. Seller's responsibility for correcting all non-conformities in the Goods will extend for a period of one year after the earlier of the date on which Buyer has placed the Goods in continuous service or the date of final payment, or for such longer period of time as may be prescribed by Laws or Regulations or by the terms of any specific provisions of the Contract Documents.

ARTICLE 9 - ROLE OF ENGINEER

9.01 Duties and Responsibilities

A. The duties and responsibilities and the limitations of authority of Engineer are set forth in the Contract Documents.

9.02 Clarifications and Interpretations

A. Engineer will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents as Engineer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. Such written clarifications and interpretations will be binding on Buyer and Seller. If either Buyer or Seller believes that a written clarification or interpretation justifies an adjustment in the Contract Price or Contract Times, either may make a Claim therefor.

9.03 Authorized Variations

A. Engineer may authorize minor deviations or variations in the Contract Documents by: 1) issuance of approved Shop Drawings when such change or deviation was duly noted by Seller as required in Paragraph 5.06.C.4, or 2) a Field Order.

9.04 Rejecting Non-Conforming Goods and Special Services

A. Engineer will have the authority to disapprove or reject Goods or Special Services which Engineer believes to be non-conforming.

9.05 Decisions on Requirements of Contract Documents

A. Engineer will be the initial interpreter of the Contract Documents and judge of the acceptability of the Goods and Special Services. Claims, disputes and other matters relating to the acceptability of the Goods and Special Services or the interpretation of the requirements of the Contract Documents pertaining to Seller's performance will be referred initially to Engineer in writing with a request for a formal decision in accordance with this paragraph.

B. When functioning as interpreter and judge under this Paragraph 9.05, Engineer will not show partiality to Buyer

or Seller and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Engineer pursuant to this Paragraph 9.05 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in Paragraph 10.07) will be a condition precedent to any exercise by Buyer or Seller of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.06 Claims and Disputes

A. *Notice*: Written notice of each Claim, dispute or other matter relating to the acceptability of the Goods and Special Services or the interpretation of the requirements of the Contract Documents pertaining to Seller's performance shall be delivered by the claimant to Engineer and the other party to the Agreement within 15 days after the occurrence of the event giving rise thereto, and written supporting data will be submitted to Engineer and the other party within 45 days after such occurrence unless Engineer allows an additional period of time to ascertain more accurate data.

B. *Engineer's Decision*: Engineer will render a decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. Engineer's written decision on such Claim, or dispute, or other matter will be final and binding upon Buyer and Seller unless:

1. an appeal from Engineer's decision is made within the time limits and in accordance with the dispute resolution procedures set forth in Article 13; or

2. if no such dispute resolution procedures have been set forth, a written notice of intention to appeal is delivered by Buyer or Seller to the other and to Engineer within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision (unless otherwise agreed to in writing by Buyer and Seller), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If Engineer does not render a formal decision in writing within the time stated in Paragraph 9.06.B., a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

ARTICLE 10 - PAYMENT

10.01 Applications for Progress Payments

A. Seller shall submit to Buyer for Engineer's review Applications for Payment filled out and signed by Seller and accompanied by such supporting documentation as is required by the Contract Documents and also as Buyer or Engineer may reasonably require. The timing and amounts of progress payments shall be as stipulated in the Agreement.

1. The first application for Payment will be submitted after review and approval by Engineer of all Shop Drawings and of all Samples required by the Contract Documents.

2. The second Application for Payment will be submitted after receipt of the Goods has been acknowledged in accordance with Paragraph 8.01.B and will be accompanied by a bill of sale, invoice or other documentation satisfactory to Buyer warranting that Buyer has rightfully received good title to the Goods from Seller and that the Goods are free and clear of all liens. Such documentation will include releases and waivers from all parties with viable lien rights. In the case of multiple deliveries of Goods, additional Applications for Payment accompanied by the required documentation will be submitted as Buyer acknowledges receipt of additional items of the Goods.

10.02 Review of Applications for Progress Payments

A. Engineer will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Buyer, or return the Application to Seller indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Seller may make the necessary corrections and resubmit the Application.

1. Engineer's recommendation of payment requested in the first Application for Payment will constitute a representation by Engineer, based on Engineer's review of the Application for Payment and the accompanying data, that the Shop Drawings and Samples have been reviewed and approved as required by the Contract Documents and Seller is entitled to payment of the amount recommended.

2. Engineer's recommendation of payment requested in the Application for Payment submitted upon Buyer's acknowledgment of receipt of the Goods will constitute a representation by Engineer, based on Engineer's review of the Application for Payment and the accompanying data Seller is entitled to payment of the amount recommended. Such recommendation will not constitute a representation that Engineer has made a final inspection of the Goods, that the Goods are free from non-conformities, acceptable or in conformance with the Contract Documents, that Engineer has made any investigation as to Buyer's title to the Goods, that exhaustive or continuous inspections have been made to check the quality or the quantity of the Goods beyond the responsibilities specifically assigned to Engineer in the Contract Documents or that there may not

be other matters or issues between the parties that might entitle Seller to additional payments by Buyer or Buyer to withhold payment to Seller.

3. Engineer may refuse to recommend that all or any part of a progress payment be made, or Engineer may nullify all or any part of any payment previously recommended if, in Engineer's opinion, such recommendation would be incorrect or if on the basis of subsequently discovered evidence or subsequent inspections or tests Engineer considers such refusal or nullification necessary to protect Buyer from loss because the Contract Price has been reduced, Goods are found to be non-conforming, or Seller has failed to furnish acceptable Special Services.

10.03 Amount and Timing of Progress Payments

A. Subject to Paragraph 10.02.A., the amounts of the progress payments will be as provided in the Agreement. Buyer shall within 30 days after receipt of each Application for Payment with Engineer's recommendation pay Seller the amount recommended; but, in the case of the Application for Payment upon Buyer's acknowledgment of receipt of the Goods, said 30-day period may be extended for so long as is necessary (but in no event more than 60 days) for Buyer to examine the bill of sale and other documentation submitted therewith. Buyer shall notify Seller promptly of any deficiency in the documentation and shall not unreasonably withhold payment.

10.04 Suspension of or Reduction in Payment

A. Buyer may suspend or reduce the amount of progress payments, even though recommended for payment by Engineer, under the following circumstances:

1. Buyer has reasonable grounds to conclude that Seller will not furnish the Goods or the Special Services in accordance with the Contract Documents,

2. Buyer has requested in writing assurances from Seller that the Goods or Special Services will be delivered or furnished in accordance with the Contract Documents, and Seller has failed to provide adequate assurances within ten days of Buyer’s written request.

B. If Buyer refuses to make payment of the full amount recommended by Engineer, Buyer will provide Seller and Engineer immediate written notice stating the reason for such action and promptly pay Seller any amount remaining after deduction of the amount withheld. Buyer shall promptly pay Seller the amount withheld when Seller corrects the reason for such action to Buyer’s satisfaction.

10.05 Final Application for Payment

A. After Seller has corrected all non-conformities to the satisfaction of Buyer and Engineer, furnished all Special Services, and delivered all documents required by the Contract Documents, Engineer will issue to Buyer and Seller a notice of acceptability. Seller may then make application for final payment following the procedure for progress payments. The final Application for Payment will be accompanied by all documentation called for in the Contract Documents, a list of all unsettled claims and such other data and information as Buyer or Engineer may reasonably require.

10.06 Final Payment

A. If, on the basis of the review of the final Application for Payment and accompanying documentation, Engineer is satisfied that the Goods and Special Services have been furnished in accordance with the Contract Documents, and that Seller's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, recommend in writing final payment subject to the provisions of Paragraph 10.07 and present the Application to Buyer. Otherwise, Engineer will return the Application to Seller, indicating the reasons for refusing to recommend final payment, in which case Seller shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, Buyer shall, within 30 days after receipt thereof, pay Seller the amount recommended by Engineer.

10.07 Waiver of Claims

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Buyer against Seller, except Claims arising from unsettled liens and Claims, from non-conformities in the Goods or Special Services appearing after final payment, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Seller's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Seller against Buyer other than those previously made in accordance with the requirements herein and expressly noted in writing by Seller as still unsettled in its final Application for Payment.

ARTICLE 11 - CANCELLATION, SUSPENSION, AND TERMINATION

11.01 Cancellation

A. Buyer has the right to cancel the Contract, without cause, at any time prior to delivery of the Goods by written notice. Cancellation pursuant to the terms of this paragraph shall not constitute a breach of contract by Buyer. Upon cancellation:

1. Buyer shall pay Seller for Goods, specially manufactured for the Project, plus any documented

reasonable direct and indirect costs incurred by Seller in producing such Goods not recovered by payment for the reasonable value of the Goods.

2. For Goods which are not specially manufactured for the Project, Seller shall be entitled to a restocking charge of 10 percent of the unpaid Contract Price of such Goods.

11.02 Suspension of Performance by Buyer

A. Buyer has the right to suspend performance of the Contract, without cause, by written notice. Upon suspension under this paragraph, Seller shall be entitled to an increase in the Contract Times and Contract Price caused by the suspension, provided that performance would not have been suspended or delayed for causes attributable to Seller.

11.03 Suspension of Performance by Seller

A. Subject to the provisions of Paragraph 5.07.B, Seller may suspend the furnishing of the Goods and Special Services only under the following circumstance:

1. Seller has reasonable grounds to conclude that Buyer will not perform its future payment obligations under the Contract. ("Reasonable grounds" shall not include a pending dispute or disagreement with Buyer) and,

2. Seller has requested in writing assurances from Buyer that future payments will be made in accordance with the Contract, and Buyer has failed to provide such assurances within ten days of Seller's written request.

11.04 Breach and Termination

A. Buyer's Breach

1. Buyer shall be deemed in breach of the Contract if it fails to comply with any material provision of the Contract Documents, including but not limited to:

a. wrongful rejection or revocation of Buyer's acceptance of the Goods,

b. failure to make payments in accordance with the Contract Documents, or

c. wrongful repudiation of the Contract.

2. Seller shall have the right to terminate the Contract for cause by declaring a breach should Buyer fail to comply with any material provisions of the Contract. Upon termination, Seller shall be entitled to all remedies provided by Laws and Regulations.

a. In the event Seller believes Buyer is in breach of its obligations under the Contract, Seller shall provide Buyer with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Buyer shall have seven days from receipt of the written notice declaring the breach (or such longer period of time as Seller may grant in writing) within which to cure the alleged breach.

B. Seller's Breach

1. Seller shall be deemed in breach of the Contract if it fails to comply with any material provision of the Contract Documents, including, but not limited to:

a. failure to deliver the Goods or perform the Special Services in accordance with the Contract Documents,

b. wrongful repudiation of the Contract, or

c. delivery or furnishing of non-conforming Goods or Special Services.

2. Buyer may terminate Seller's right to perform the Contract for cause by declaring a breach should Seller fail to comply with any material provision of the Contract Documents. Upon termination, Buyer shall be entitled to all remedies provided by Laws and Regulations.

a. In the event Buyer believes Seller is in breach of its obligations under the Contract, and except as provided in Paragraph 11.04.B.2.b, Buyer shall provide Seller with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Seller shall have seven days from receipt of the written notice declaring the breach (or such longer period of time as Buyer may grant in writing) within which to cure the alleged breach.

b. If and to the extent that Seller has provided a performance bond under the provisions of Paragraph 4.01, the notice and cure procedures of that bond, if any, shall supersede the notice and cure procedures of Paragraph 11.04.B.2.a.

ARTICLE 12 - LICENSES AND FEES

12.01 Intellectual Property and License Fees

A. Unless specifically stated elsewhere in the Contract Documents, Seller is not transferring any intellectual property rights, patent rights, or licenses for the Goods delivered. However, in the event the Seller is manufacturing to Buyer's design, Buyer retains all intellectual property rights in such design.

B. Seller shall pay all license fees and royalties and assume all costs incident to the use or the furnishing of the

Goods, unless specified otherwise by the Contract Documents.

12.02 Seller's Infringement

A. Subject to Paragraph 12.01.A, Seller shall indemnify and hold harmless Buyer, Engineer and their officers, directors, partners, employees, agents, consultants, contractors, and subcontractors from and against all claims, costs, losses, damages, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement or alleged infringement of any United States or foreign patent or copyright by any of the Goods delivered hereunder.

B. In the event of suit or threat of suit for intellectual property infringement, Buyer will notify Seller within a reasonable time of receiving notice thereof.

C. Upon written demand from Buyer, Seller shall be given the opportunity to defend the claim or suit, including negotiating a settlement. Seller shall have control over such claim or suit, provided that Seller agrees to bear all expenses and to satisfy any adverse judgment thereof.

1. If Seller fails to defend such suit or claim after written demand by Buyer, Seller will be bound in any subsequent suit or claim against Seller by Buyer by any factual determination in the prior suit or claim.

2. If Buyer fails to provide Seller the opportunity to defend such suit or claim after written demand by Seller, Buyer shall be barred from any remedy against Seller for such suit or claim.

D. If a determination is made that Seller has infringed upon intellectual property rights of another, Seller may obtain the necessary licenses for Buyer's benefit, or replace the Goods and provide related design and construction as necessary to avoid the infringement at Seller's own expense.

12.03 Buyer's Infringement

A. Buyer shall indemnify and hold harmless Seller, and its officers, directors, partners, employees, agents, consultants, contractors, and subcontractors from and against all claims, costs, losses, damages, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement or alleged infringement of any United States or foreign patent or copyright caused by Seller's compliance with Buyer's design of the Goods or Buyer's use of the Goods in combination with other materials or equipment in any process (unless intent of such use was known to Seller and Seller had reason to know such infringement would result).

B. In the event of suit or threat of suit for intellectual property infringement, Seller must within a reasonable time after receiving notice thereof notify Buyer.

C. Upon written demand from Seller, Buyer shall be given the opportunity to defend the claim or suit, including negotiating a settlement. Buyer shall have control over such claim or suit, provided that Buyer agrees to bear all expenses and to satisfy any adverse judgment thereof.

1. If Buyer fails to defend such suit or claim after written demand by Seller, Buyer will be bound in any subsequent suit or claim against Buyer by Seller by any factual determination in the prior suit or claim.

2. If Seller fails to provide Buyer the opportunity to defend such suit or claim after written demand by Buyer, Seller shall be barred from any remedy against Buyer for such suit or claim.

12.04 Reuse of Documents

A. Neither Seller nor any other person furnishing any of the Goods or Special Services under a direct or indirect contract with Seller shall: (1) acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions; or (2) reuse any of such Drawings, Specifications, other documents, or copies thereof on any other project without written consent of Buyer and Engineer and specific written verification or adaptation by Engineer. This prohibition will survive termination or completion of the Contract. Nothing herein shall preclude Seller from retaining copies of the Contract Documents for record purposes.

ARTICLE 13 - DISPUTE RESOLUTION

13.01 Dispute Resolution Method

A. Disputes between Buyer and Seller will be resolved as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of Paragraphs 9.05 and 9.06, Buyer and Seller may exercise such rights or remedies as they have under Controlling Law.

ARTICLE 14 - MISCELLANEOUS

14.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

14.02 Controlling Law

A. This Contract is to be governed by the law of the state in which the Point of Destination is located.

14.03 Computation of Time

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

14.04 Cumulative *Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

14.05 Survival of Obligations

A. All representations, indemnifications, warranties and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Goods or Special Services and termination or completion of the Agreement.

Supplementary Conditions to EJCDC P-700 Standard General Conditions for Procurement Contracts Revised 2000.

SC5.05A Replace entire article with the following:

Buyer shall be responsible for all taxes and duties arising out of the sale of the Goods and the furnishing of Special Services. The cost for all taxes and duties shall be in addition to the Seller's Contract Price.

SC5.07B Replace entire article with the following:

Seller shall carry on the work and adhere to the progress schedule during all disputes or disagreements with Buyer with the exception of disputes over payments approved by Engineer that remain overdue.

SC5.08.F Add a new article that reads as follows:

For warranties on Goods supplied by Supplier to remain in effect, any replacement or addition of Goods to the system must be made using Goods approved in writing by Supplier.

SC5.08.G Add a new article that reads as follows:

Implied warranties,, including but not limited to warranties of fitness for particular purpose, use or application, and all other obligations or liabilities on the part of Supplier, unless such warranties, obligations or liabilities are expressly agreed to in writing by Supplier, are null and void.

SC5.09.A.2 Replace entire article with the following:

Only to the extent such damage is caused in whole or in part by any negligent act of Seller or any individual or entity directly or indirectly employed to furnish any of the Goods or Special Services or anyone for whose acts Seller may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.

SC6.02.A Replace entire article with the following:

Seller shall deliver the Goods F.C.A. the Point of Destination, or as otherwise specified in the Purchase Agreement for this contract, in accordance with the Contract Times set forth in the Agreement, or other date agreed to by Buyer and Seller.

SC6.02.E Replace entire article with the following:

Partial deliveries and payments for partial deliveries shall be permitted.

SC6.02.F Add a new article as follows:

Where shipment of Goods is delayed by Buyer, Buyer shall pay Seller a reasonable storage fee plus a delay in payment charge to be determined by Seller. Alternatively, Buyer may purchase Goods and Seller shall issue Buyer a Lien Waiver and Warehouse Receipt upon receipt of payment.

SC6.03.A Replace entire article with the following:

Risk of loss and insurable interests transfer from Seller to Buyer upon delivery of the Goods to the Buyer's Point of Destination.

SC7.01.B Replace entire article with the following:

Buyer shall give Seller a minimum of fifteen (15) days notice of any changes in the Goods and Special Services ordered by Buyer. If any such change or action by Buyer affects the Contract Price, Contract Times or Seller's warranties to Buyer, Seller shall notify Buyer within 15 days after the occurrence of the event giving rise thereto, and written supporting data will be submitted to Buyer within 45 days after such occurrence. If Seller fails to do so, Seller waives any Claim for such adjustment.

SC8.01.A.1 Replace entire article with the following:

Buyer shall have the right to perform, or cause to be performed, reasonable inspections, excluding inspection of proprietary membrane production, and require reasonable tests of the Goods at Seller's facility, and at the Point of Destination. Seller shall allow Buyer a reasonable time to perform such inspections or tests.

SC8.02.B.2 Replace entire article with the following:

Seller shall bear all costs for direct damages attributable to the removal and replacement of the non-conforming Goods as provided in Paragraph 8.02.E.

SC8.02.D.1 Replace entire article with the following:

Instead of requiring correction or removal and replacement of non-conforming Goods discovered either before or after final payment, Buyer may accept the non-conforming Goods.

SC8.02.E Replace entire article with the following:

Seller shall pay all claims and costs for direct damages, including the correction or removal and replacement of the non-conforming Goods and the replacement of property of Buyer and others destroyed by the correction or removal and replacement of the non-conforming Goods, or the obtaining of conforming Special Services from others.

SC10.01.A Replace articles 1. and 2. with the following:

1. Payment terms shall be as specified on the Purchase Agreement for this contract.
2. All payments shall be due in full thirty (30) days from the date of invoice.
3. Past due balances shall be subject to a service charge of 1 ½% per month (18% per annum) but not more than the amounts allowed by law.
4. Partial shipments will be allowed and invoiced in accordance with the above terms.
5. Charges by Supplier related to delays in delivery requested by Buyer, and subsequent storage of Goods by Supplier, shall be as detailed in Supplier's as-sold proposal to Buyer.

6. Supplier may cancel or delay delivery of Goods and Services in the event Buyer fails to make prompt payment therefore, or in the event of an arrearage in Buyer's account with Supplier.

SC10.02.1 Replace entire article with the following:

Engineer's recommendation of payment requested for submittal of Shop Drawings and Samples for Payment will constitute a representation by Engineer, based on Engineer's review of the Application for Payment and the accompanying data, that the Shop Drawings and Samples have been reviewed and approved as required by the Contract Documents and Seller is entitled to payment of the amount recommended.

SC11.02.A Replace entire article with the following:

Buyer has the right to suspend performance of the Contract for up to 90 calendar days, without cause, by written notice. Upon suspension under this paragraph, Seller shall be entitled to an increase in the Contract Times and Contract Price caused by the suspension, provided that performance would not have been suspended or delayed for causes attributable to Seller.

SC11.04.C Add a new article that reads as follows:

Seller may terminate the Contract if Buyer suspends performance of the Contract for more than 90 calendar days.

SC12.01.A Replace entire article with the following:

Unless specifically stated elsewhere in the Contract Documents, Seller is not transferring any intellectual property rights, patent rights, or licenses for the Goods delivered.

SC12.01.C Add a new article that reads as follows:

Seller grants Buyer a non-exclusive royalty free license to use any process or apparatus claimed in any patent owned by Seller but only to the extent that this license is required by buyer to build and operate the Membrane System described in this contract using ZeeWeed membrane modules supplied by Supplier. All other rights are reserved.

SC12.04.A Replace entire article with the following:

Neither Seller nor any other person furnishing any of the Goods or Special Services under a direct or indirect contract with Seller shall acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions.

SC12.04.B Add a new article that reads as follows:

Buyer shall not reuse any Drawings, Specifications, other documents, or copies thereof produced by Seller for this project on any other project without written consent of Seller.

SC12.04.C Add a new article that reads as follows:

The prohibition in SC12.04.A and SC12.04.B will survive termination or completion of the Contract. Nothing herein shall preclude Buyer or Seller from retaining copies of the Contract Documents for record purposes.

Water for the World

Final Proposal For
A ZeeWeed® Membrane Filtration System
For The
Santee Cooper Regional Water Authority
Lake Marion Regional WTP

Proposal Number 1013-02

Submitted to:

Contractors Bidding

Submitted by:

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June 23, 2004

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1.0 COMMERCIAL

1.1 Pricing Summary

The pricing to supply equipment and services as described in this proposal is as follows:

One (1) ZeeWeed® Membrane Filtration System as per the scope in Appendix A of this proposal for the following capacity:

Initial Membrane Capacity:

Maximum Day Flow	**8.0**	**MGD**

Hydraulic Capacity:

Maximum Day Flow	**12.0**	**MGD**

ITEM NO

0010 – All ZENON Parts and Equipment **US $**

0010AA - ZENON Furnished Membrane Cassettes: **US $**

0010AB - ZENON Furnished Pumps and Blowers: **US $**

0010AC - ZENON Furnished Instrumentation: **US $**

1.2 Validity

The pricing quoted for Item No. 0010 remains valid for 90 day's for Government acceptance after the date offers are due. The pricing quoted for Item No. 0010AA, 0010AB and 0010AC remain valid for 12 months for Government acceptance after the date offers are due, with the following stipulations:

- The Supplier's price and schedule shall be based on applicable Federal and State laws, local ordinances, codes, and standards in effect as of the date of Supplier's proposal. Should such laws, codes and standards change and increase the cost of performing the work or impact the schedule, Supplier shall, upon notice to Owner of such, be entitled to an equitable adjustment of price and /or schedule. Similarly, should such laws, codes, and standards change and decrease the cost of performing the work, Owner shall be entitled to an equitable adjustment of price.

- Notwithstanding that it may be known at the time of submission of a quotation that increased or decreased duty and/or foreign exchange will become chargeable on the equipment or any part thereof in the near future, only duty chargeable and/or foreign exchange applicable on the closing date for receipt of quotations shall be included by the equipment supplier in his quoted prices. Any increase or decrease in the duty and/or foreign exchange applicable to the said equipment or any part thereof from the said closing date to the date of entry into Canada of the said equipment, shall result in a corresponding increase or decrease in the price charged by the Supplier save that no change in price shall be made if the net amount of increase or decrease is less than $500.00. Any increase or decrease in price pursuant to the foregoing shall be debited or credited, as the case may be, to the Owner through the purchaser.

- On the date the Supplier enters into a contract with the Purchaser, the Supplier's contract price shall be adjusted according to the change in CPI from the date of the Supplier's bid to the date both the Supplier and the Purchaser have executed their contract. The CPI index to be used shall be the "CPI-U, US City Average, all items (non-seasonally adjusted)" as compiled by the U.S. Department of Labor.

If a formal purchase order is not received within the validity period, both the pricing and delivery schedule are subject to review and adjustment.

1.3 Payment Terms

The Terms of payment stated below will take precedence over those stated within the EJCDC Terms and Conditions.

- 15% with Purchase Order;
- 10 % on Submission of Shop Drawings;
- 40 % on Shipment of Equipment (Partial shipments permitted);
- 30 % on Shipment of Membranes
- 5 % on Completion of Commissioning

ZENON has included a project financing cost directly associated with the assumed payment terms due to the project funding and project schedule. Prior to receipt of a purchase order, there may be an opportunity for a reduction if the payment terms and/or project schedule are different from those assumed.

All payments on approved credit accounts shall be paid at 90 % of invoiced value within thirty (30) days from date of invoice. Past due balances shall be subject to a service charge of 1½% per month (18% per annum), but not more than the amount allowed by law. Partial shipments, if reqested, will be billed as made and payments therefore are subject to the above terms. After all Equipment and Services has been shipped or performed, the total invoiced amount due will be 90 % of the System Lump Sum Price. The total Retainage after all Equipment has been shipped and Services acquired, will be a maximum of 10% of the Lump Sum Price.

ZENON may delay delivery of Product with concurrence by the OWNER in the event the **CONTRACTOR** fails to make prompt payment, or in the event of an arrearage in **CONTRACTOR's** account with ZENON. ZENON hereby retains a security interest in the Product furnished until **CONTRACTOR** has made payment in full in accordance with the terms herein. **CONTRACTOR** shall cooperate fully with ZENON to execute such documents and to accomplish such filings and/or recordings thereof as ZENON may deem necessary for the protection of ZENON's interest in the Products furnished.

1.4 Taxes & Duties

No sales, consumer use or other similar taxes or duties are included in the above pricing. Any such taxes and duties shall be for the account of the purchaser.

ZENON shall ship in a manner to avoid all duty or tariffs. If ZENON is instructed to ship in a manner that causes duty or tariffs to be payable, ZENON will provide written notification to the Purchaser and will be compensated for the total amount of duty or tariff paid.

1.5 Bonds

No Performance or Maintenance Bonds are included in the above pricing. Bonds can be provided on request but will be at additional cost.

1.6 Freight

The equipment is quoted F.C.A. Project Site. Delivery to the project site is conditional upon provision of access roads of a nature that will permit access by tractor-trailers to the project site. Off-loading and positioning of equipment at the job-site is not included. One shipment of equipment and one shipment of membranes have been included. Partial shipments are accepted, however, additional freight and duties may apply.

1.7 Customer Caused Shipping Delays

Where ZENON has procured the equipment, including membranes, in accordance with the Customer's purchase order and the equipment is being stored at the ZENON production facility and is ready for shipment to the project site on the "shipping date", and where the Customer is not ready to receive the equipment or does not have adequate facilities for properly storing the equipment at the project site, the Customer shall provide written notification to ZENON, at least 15 calendar days before the scheduled shipment date, advising that there shall be a Customer caused shipping delay, and on or before the scheduled shipment date, send a representative to the ZENON production facility, at the Customer's expense, to jointly inspect the equipment with a ZENON representative and to certify that the materials are now ready for shipment, and provide the ZENON representative with a payment of the amount due to ZENON upon shipment and delivery of the equipment. As ZENON receives the payment of the amount due to ZENON upon shipment and delivery of the

equipment, ZENON shall issue the Customer a Lien Waiver and Warehouse Receipt, whereby the Customer takes ownership of the materials and ZENON agrees to store the materials in a secured facility, for a storage fee of US$10.00 per year per square foot of warehouse floor area occupied, until such time as the Customer provides ZENON with written notification that the project site is ready to receive the materials and written instruction is given to ZENON to deliver the materials to the project site.

Please also be advised that the membranes are not shipped until they are required at the plant site, as identified in the original production schedule. If this shipping date does not correspond with the original production schedule and ZENON is forced to store the membranes, the storage fee as outlined above will apply.

1.8 Quality Basis

For the purposes of establishing a quality basis for equipment included as part of the membrane filtration system being supplied, reference is made to the equipment provided by certain manufacturers. The term “or equal” where used herein is intended to permit the supply of equipment by other manufacturers than those named in this proposal for these cases where either better equipment or faster delivery can be obtained from an alternative supplier. ZENON therefore reserves the right to substitute equipment that ZENON considers to be of equal quality and suitability for the intended application from alternative manufacturers to those named herein, upon the approval of the Engineer.

1.9 Operating & Maintenance Manuals

ZENON will provide six (6) complete copies of the O&M Manuals.

1.10 Indemnification

ZENON’s liability for damages shall not exceed the payment, if any, received by ZENON for the materials or services furnished or to be furnished, as the case may be, which is the subject of claim or dispute. In no event will ZENON be liable for incidental, consequential or special damages, of any kind, however caused, arising out of, or in any way connected with, the materials or services furnished by ZENON to the customer.

1.11 Standard Terms and Conditions

Zenon Environmental has included the EJCDC P-700 Standard General Conditions for procurement contracts revised 2000, as well as Supplemental Conditions in Appendix B.

1.12 Field Service

The equipment pricing above includes Field Service from ZENON Technicians for assistance with the equipment installation, commissioning, operator training and process start-up assistance in accordance with Section 6.0 of this proposal.

Any additional days of Field Service required will be at ZENON's Standard per diem rate detailed in Section 6.7.

1.13 Equipment Shipment and Delivery

ZENON's Standard drawing submission and equipment shipment schedule is indicated below. ZENON will update the schedule in accordance with the Contractor's construction schedule. Drawing submission milestones and equipment shipment periods are quoted from date of receipt of a formal signed purchase order:

Submission of GA Drawings	8 to 10 weeks from acceptance of P.O.
Drawing Approval:	3 weeks from submission of drawings
Equipment Shipment:	18 to 20 weeks from approval of shop drawings
Plant Operation Manuals:	2 weeks after shipment of equipment to site
Operator Training:	When preferred by Customer but no later than 2 weeks prior to the scheduled plant start-up

The above delivery schedule is presented based on current workload backlogs and production capacity. If a formal purchase order is not received within the period of validity of this proposal, the delivery schedule is subject to review and adjustment.

If specific project deadlines require a faster delivery schedule, this can often be accommodated by making partial equipment shipments of critical

items, however, some additional freight and duty costs may be incurred in such cases, for Purchaser's account.

The delivery period quoted is presented based on review ***and approval*** of equipment shop drawings within a three (3) week period. Any delay in approval of shop drawings may affect the proposed shipment schedule.

1.14 Equipment Drawings, Plans & Specifications

Unless otherwise specified, ZENON will furnish as part of this order the following types of drawings:

1. Process Flow Diagram
2. Process and Instrumentation Diagrams
3. General Arrangement Drawings showing equipment dimensions and weights required for the equipment foundations (foundations and fasteners by others), and the utility requirements for the process equipment being furnished by ZENON with the System being supplied.
4. Standard sub-vendors dimensional outline drawings for the items of major process equipment (e.g. pumps, blowers, air compressors) which are necessary for the purchaser to complete its engineering and installation.
5. Standard sub-vendors equipment cut sheets for the major process equipment and other equipment items (major instruments and system components)
6. Electrical Drawings including Single Line Diagrams, Control Panel Layouts and Interconnecting Wiring Diagrams.
7. Assembly Drawings including General Equipment Layouts, deemed necessary by ZENON to be required for the Purchaser's field forces to erect the equipment.

2.0 MEMBRANE PERMEATE QUALITY

The design flow rates of the ZeeWeed® Membrane Filtration System, the characteristics of the raw water, and the final permeate requirements are summarized in Table 1.

Table 1: Process Design Requirements used in ZeeWeed® Design

Design Flow	Units	Raw Water	Permeate
Design Flow (initial) Maximum Daily Flow	MGD	8.7	8.0
Design Flow (future) Maximum Daily Flow	MGD	13.0	12.0
Turbidity Maximum Average	NTU	 7 3	 <0.15 100% of the time <0.10 100% of the time
Maximum Apparent Color	PCU	46	<5 (Note 1)
Giardia		N/A	> 4 log removal (Note 2)
Cryptosporidium		N/A	> 4 log removal (Note 2)
Viruses		N/A	> 2 log removal (Note 2)

Note 1: Color removal is a function of three variables as follows: the actual color levels in the water, the type of coagulant used, and the pH of the water. Color removal is dependent on optimization of the coagulation-flocculation pretreatment process.

Note 2: The ZeeWeed® Membrane is guaranteed to achieve 4 log removal of *Giardia* and *Cryptosporidium* to the limits of detection, however it must be realized that 4 log removal can only be achieved if > 10^4 cysts/oocysts are present in the raw water

Note 3: Viruses are usually less than 0.1 microns, however they are typically associated with host bacteria or attached to particulates

larger than 0.1 microns and can therefore be removed by the ZeeWeed® Membrane. ZENON has received a minimum 2.0 log virus rejection certification by the DHS based on the results of the California DHS Certification Testing which showed a minimum virus rejection of 2.5 log for the ZeeWeed® Membrane.

The plant is being designed with expansion capabilities. Expansion to the higher flows would be achieved by adding two (2) membrane cassettes per train. The membrane air scour blowers would be resheaved to account for the additional membrane aeration requirement.

3.0 TECHNICAL SPECIFICATIONS

3.1 Scope of Supply

3.1.1 Scope of Supply - ZENON

The main equipment included with the supply of the ZeeWeed® Membrane Filtration System is listed in Appendix A. This table should be read in conjunction with the P&ID drawings located in Appendix C. Please refer to the P&ID drawings and the BOM table for scope of supply by ZENON and that which is to be provided separately by the Installation Contractor (by Others).

In case of conflict ZENON P&ID's take precedence for ZENON supplied equipment and devices.

3.1.2 Scope of Supply - OTHERS

The following items are for supply by OTHERS and will include, but are not limited to:

- Overall plant design;
- Review of equipment drawings and specifications;
- Unloading of delivered equipment at the F.C.A. point including receiving, sign-off and safe storage of equipment at site until ready for installation. Contractor to provide suitable warehousing at or near the site for storage of the materials; or make arrangements with ZENON to hold off shipments and pay the costs of additional storage).
- Storage of membrane cassettes on site. Cassettes must be stored in a sheltered area, protected from freezing, direct sunlight or extreme heat, and sealed as shipped until ready for use. It is recommended that the cassettes not be stored longer than necessary prior to installation. Coordinate with ZENON for appropriate shipment times.
- Equipment installation (ZENON to provide installation instructions) including, but not limited to:
    - Installation of any other loose-shipped ZENON supplied equipment not listed specifically in the proposal;

- Alignment and coupling of all pumps and other rotating equipment shall be completed by a qualified and certified millwright provided by the General Contractor or other local firm. Submission of an alignment report to ZENON is required for equipment warranty validation purposes for each piece of equipment;
- Supply and installation of all required oil and lubrication for equipment start-up and initial operations as per the manufacturer's literature for the specific piece of equipment;
- Flushing of all piping and membrane tanks and verification of removal of all residual debris from construction;
- Installation & removal of suitable temporary screens on all process lines entering the membrane basins to prevent foreign construction related debris from coming in contact with the membranes. Debris found within the tank can potentially void membrane warranties or require immediate replacement of damaged cassettes;
- Providing assistance where necessary to electrical trades in the accomplishment of functions requiring mechanical tradesmen (including pipe fitters and any other trade within the scope of this contract);
- Touch up primer and finish paint surfaces on equipment as required at the completion of the project;
- The design, supply and installation of equipment anchor bolts.

Feed water pre-treatment equipment that may include, but not be limited to:

- Facilities for the screening of raw water including the design, supply and installation of screening equipment and facilities for collection and disposal of the influent raw water screenings;
- Raw water pre-treatment chemical feed systems;

Civil and structural works, provision of main plant structures, existing tank modifications, buildings, equipment foundation pads etc. including, but not be limited to,:

- Construction of new concrete membrane tanks
- Construction of foundation pads for the major process equipment;

- Provision of air conditioned rooms for housing ZENON supplied electrical equipment including the PLC to prevent overheating of sensitive electronic equipment or exposure to excessive dust (depending on local climatic conditions).

Equipment access platforms, walkways, stairs etc.
Design, supply, installation and testing of process and utilities piping, pipe supports, hangers, valves etc. including but not limited to:

- All piping shall be tested according to the project specifications
- Piping from the feed water source to the membrane tanks;
- Piping from the permeate headers to the permeate pumps;
- Piping from the permeate pumps to the common permeate collection header and from the common permeate collection header to the filtered water storage tank(s);
- Piping for conveying the reject water & waste chemical cleaning solutions from the membrane tanks to the reject disposal facilities;
- Common back wash header;
- Piping from the common permeate collection header to the fill connections on the backwash and CIP water storage tanks
- Piping from the backwash water storage tanks to the suction flange connections on the backwash pumps
- Piping from the backwash pump discharge flange connections to the permeate headers on the membrane tanks
- Piping from the CIP water storage tank to the suction flange connection on the CIP wash pump and from the CIP wash pump discharge flange connection to the permeate headers on the membrane tanks;
- Piping from the blowers to the ZENON supplied air header pipes that run along the length of the individual membrane tanks including the common air feed pipe;
- Piping from the various chemical feed systems to the actual dosing injection points;
- Small bore piping from the air release valves located on the air separation columns to the vacuum pump system inlet piping manifold;

- Piping from the vacuum pump system discharge manifold to the membrane tanks;
- Pipe supports, hangers etc. for all piping systems;
- Any heat tracing, insulation and cladding on any piping systems;
- Temporary piping systems required for the start-up and commissioning of the ZENON equipment. Typically the provision of a re-circulation loop between the permeate header and the tank inlet channel/pipe is required for the start-up of the ZENON system to allow for testing prior to delivery of water to the distribution system;

Design, supply and installation of all power and instrumentation interconnecting wiring, optical fibers, conduit and appurtenances from the control panels, MCC's etc. to field mounted instruments, motors, valves/valve actuators and any other equipment supplied by ZENON including, but not limited to,:

- Electrical wiring interconnections (including wiring, conduit and any other appurtenances required to provide power connections as needed) from the electrical power source to the PLC Panel(s) and the Motor Control Center(s);
- Electrical wiring interconnections (including wiring, conduit and any other appurtenances required to provide power connections needed) from the Motor Control Center to the various pumps, blowers and other equipment associated with the membrane filtration system;
- Instrumentation wiring, conduit and other appurtenances required to provide connections as needed between the various field mounted valves and instruments to the Local PLC Panels (Remote I/O Stations) and between the Local PLC Panels (Remote I/O Stations) and the Master PLC Panel
- All junction boxes, disconnect switches and local operator controls required by the contract drawings and specfications, site standards and local codes and regulations

Design, supply and integration of plant SCADA system including interfacing with ZENON Environmental supplied control system. Supply and installation of the PLC processor, all PLC code preparation, SCADA configuration, integration and testing.

Supply and installation of miscellaneous materials for pneumatic instrumentation and valves including but not limited to; air/sample line tubing, fittings, isolating valves & mountings.

Any backwash wastewater processing facilities & equipment that may be required including but not limited to:

- Backwash (non-chemical) wastewater holding tanks;
- Any required analyzing & monitoring instruments;
- Backwash wastewater pumping equipment, pipe and valves.

Any CIP wastewater processing & neutralization facilities and equipment that may be required including but not limited to:

- CIP (chemical) wastewater holding tanks;
- CIP system waste neutralization chemical feed systems;
- Any required analyzing & monitoring instruments;
- CIP wastewater pumping equipment, piping and valves.

Design, supply and installation of equipment for pumping the treated water to the distribution system.

Any raw materials, chemicals, and utilities during equipment start-up and operation including a supply of raw water feed that meets all design parameters for the successful commissioning of the membrane equipment.

Design, supply and installation of bulk chemical storage facilities, transfer pumps and associated controls.

Laboratory services, operating and maintenance personnel required during equipment checkout, start-up and operation.

Any on-site painting or touch-up painting of equipment supplied.
Overhead Travelling Beam Crane or Monorail(s) & Pulley/Hoist above the process tanks for installation and removal of the membrane cassettes from the membrane tanks.

Collection and disposal offsite as applicable for spent water, including disposal of membrane rinse and flush waters. The rinse and flush water contains glycerine used as preservative. As this water can have a COD of 9,000 mg/L during the first flush cycle, planning and coordination with local sewer authorities should be considered in advance. Typical volumes expected are three (3) full membrane tanks times the number of trains in the project.

Electrical Distribution System

The proposed ZENON system incorporates modern controls including computers, programmable logic controllers, operator interfaces, variable speed drives and many instruments. The electrical distribution system in the plant design can materially affect the reliability and performance of the equipment provided.

In order to ensure long-term reliable operation, ZENON recommends that the owner engage an industrial qualified electrical contractor who is able to design, install and set up the following functions:

- Facility ground with a ground grid resistance less than 5 ohms;
- Lightning protection integrated with the facility ground;
- Transient suppression at point of entry;
- Electrical distribution with single point grounding;
- Load balancing to ensure a facility ground current of less than 5 amps;
- Harmonics control to achieve a total harmonic distortion level of less than 5%.

Detailed methods for implementing each of these functions are available upon request from ZENON. ZENON's recommended best practices are based on the best practices standards from IEEE and NEC or other national electrical code and ensure a good trade-off between initial installation costs and long-term system reliability.

4.0 WARRANTY

4.1 Equipment Warranties

ZENON provides the following warranties with the purchase of the ZeeWeed® Membrane Filtration System.

4.1.1 Material and Workmanship Warranty

The mechanical warranty is only applicable on equipment supplied by ZENON. The Warranty Period is twenty-four (24) months from final completion, that is, from the date of Substantial Performance for the ZENON supplied equipment.

ZENON takes no liability for any damage to equipment caused by inadequate storage, handling, or by defective or sub-standard workmanship or materials provided by the contractor or any other third party responsible for handling, storing and installing the equipment.

4.1.2 Membrane Warranty

The membrane modules have a 10 year warranty as follows. The initial membrane modules have 1 year full warranty and would be replaced free of charge if failure occurred during the first year of operation. The warranty includes replacement membranes for the initial membrane modules and would have a 10 year pro-rated warranty on those membranes, from their date of installation.

Example 1: If an initial membrane module fails at the end of year 8, then the module that replaces it has a prorated warranty until the end of year 18. If this module in turn fails before its 10 year warranted life then the warranty on the "second generation" replacement would not extend past the original warranty expiration date of the "first generation" module it is replacing i.e. to the end of year 18.

Example 2: If an initial membrane module fails at the end of year 14, then the module that replaces it has a prorated warranty until the end of year 24 If this module in turn fails before its 10 year warranted life then the warranty on the "second generation" replacement would not extend past the original warranty expiration date of the "first generation" module it is replacing i.e. to the end of year 24.

Example 3: If an initial membrane module fails within the first year, it will be replaced at no charge, and the extended warranty would still be applicable as outlined in examples 1 and 2.

Example 4: Whenever the initial membrane modules fail, they will be replaced at no charge, and the extended warranty would still be applicable as outlined in examples 1 and 2.

5.0 SPARE PARTS

5.1 General

The ZeeWeed® membrane system itself has no moving parts and requires little in the way of maintenance other than routine cleaning.

Other equipment included with the ZeeWeed® system such as pumps, valves etc. will require normal maintenance and replacement of parts such as pump seals. Actual consumption of spare parts is highly dependent on correct maintenance of the equipment supplied.

5.2 Spares included with ZeeWeed® Filtration Plant

No spare parts are included with the price quoted for the equipment in this proposal. Lists for recommended spare parts for other equipment will be provided in the operating and maintenance manuals.

5.3 Special Tools

No special tools are required for operation or maintenance of the equipment included in this proposal.

6.0 FIELD SERVICE

6.1 General

Complete technical support service is provided by ZENON through all phases of the project from receipt of purchase order through drawing submission, equipment shipment, installation and plant operation.

Specific field service is included with the equipment supplied to provide the Customer with:

- Instruction on equipment installation;
- Instruction on membrane installation;
- assistance with commissioning and start-up of the membrane system;
- operator training;
- assistance with acceptance testing of the system.

6.2 Equipment Off-Loading

The equipment for this project is shipped loose as discrete components and sub assemblies that can be easily off-loaded from the delivery truck or trailer or iso-container. It is anticipated that a ZENON representative will be present at site during the off-loading of the equipment provided by ZENON.

Shipment of the Membranes to site is normally made just prior to commissioning/wet testing of the ZENON system. ZENON representatives will be present when the membranes are delivered and will assist by advising the installation contractor on the details of installing the membrane cassettes within the membrane tanks. Additional information on equipment and membrane storage and handling is located in Appendix E.

6.3 Equipment Installation Assistance and Inspection

It is ZENON's experience that time spent making sure the parties involved in the installation of the equipment are well briefed and guided on the correct installation of the equipment saves considerable time and money during the equipment commissioning and system start-up.

It is anticipated that after the equipment supplied with the membrane filtration system has arrived at site and just prior to it being ready for installation a ZENON technician will be at the site to provide advice and answer any questions that the Installation Contractor's forces may have regarding the installation of the equipment. This is also to ensure that the

Installation Contractor's forces are aware of the correct method for installation of certain items that are critical to the correct operation of the ZeeWeed® System.

After the Installation Contractor's forces have been briefed on the installation of the ZeeWeed® Filtration System the installation work may commence. The ZENON technician will remain at the site for a period of time to observe the initial part of the installation work being carried out by the Installation Contractor's forces and confirm that the equipment installation is being carried out correctly and in accordance with ZENON's drawings and installation instructions. ZENON's technicians will observe the installation of the equipment for all three membrane units and the significant ancillary equipment.

After the Installation Contractor's forces have completed the installation of all the membrane filtration system equipment and prior to the installation of the membranes and commissioning/functional testing of the equipment, a ZENON technician will again visit the site. This visit to ensure the installation work has been carried out correctly and has reached a degree of completion adequate to allow installation of the membranes and plant commissioning to proceed smoothly and without delays caused by the need to rectify installation problems during the commissioning process.

During this visit the ZENON technician will review the installation of the mechanical equipment and ensure power is available (and connected) to the various electrical motors, instruments and controls provided with the ZeeWeed® Filtration System.

The ZENON technician will verify that the equipment installation is adequate to allow the plant to be commissioned and that the system is ready for the installation of the membranes to proceed.

6.4 Membrane Installation Assistance

The ZeeWeed® Membranes are normally shipped to site and installed just prior to the equipment being ready for functional testing/commissioning. The installation of the membranes in each train is not to be any earlier than two weeks prior to the commissioning of that train. When installation of the mechanical equipment is complete and the membranes are ready to be received at site, ZENON technicians will be present to advise and provide direction to the Installation Contractor on the assembly, bubble testing and installation of the ZeeWeed® membrane cassettes within the membrane tank.

Once the membranes are installed and connected to the permeate header pipe the ZeeWeed® plant is ready for wet commissioning.

6.5 Field Functional Testing & Commissioning

The first step in commissioning the ZENON equipment by the contractor consists of verifying that all field installed piping systems and connections to and from the membrane filtration system equipment have been made correctly and that all field installed instrumentation is correctly wired to remote I/O panels and PLC system and that all instruments have been calibrated. During commissioning, the Installation Contractors forces must be available to make any necessary field adjustments to software, tuning of control loops, adjusting of VFD's, etc. to ensure the system complies with ZENON's design specifications.

Once the ZENON technicians are satisfied that the electrical and mechanical equipment installation is correct and that it has passed all tests with clean water, the contractor shall commission the system using the feed to the Membrane Filtration Treatment Facility. Optimization of the operation of each unit is to be undertaken sequentially on one train at a time, under the watchful guidance of a ZENON field representative.

Once operation on the influent water meets the design permeate quality, the treated water may be diverted to the treated storage facilities. This effectively completes the installation and commissioning of the equipment and at this time ZENON shall receive Notice of Final Completion from the Owner/Purchaser.

6.6 Acceptance/Performance Testing

Following calibration of all instruments and completion of the Functional Test of the Membrane Filtration System, ZENON and the Contractor shall conduct acceptance testing on the system in order to confirm the proposed design.

6.7 Additional Field Service

Additional Field Service beyond what has been included above is chargeable at the rates indicated Table 2 below. The rates below are effective as of January 1, 2004 and are subject to adjustment for inflation (at yearly intervals on December 31 according to the CPI) according to the dates when the work is actually undertaken.

Table 2: Field Service Labor Rates:

	Week Days		Weekend Days	
On Site	/ Hour	/ Day	/ Hour	/ Day
Field Service Representative (FSR)	$ 95	$ 950	$ 145	$ 1,450
Programming	$ 110	$ 1,100	$ 165	$ 1,650

Off Site *including trip preparation, travel time, telephone support, and reporting*				
Field Service Representative	$ 80		$ 120	
Process Engineer or Technical Specialist	$ 95	$ 950	$ 145	$ 1,450

This rate sheet applies to short, unplanned work where time factors are constrained or unpredictable. For longer assignments and foreseen requirements, please request a Service Agreement proposal or a specific quotation.

Scheduling

Service requests for USA and international sites should be directed to our Oakville, Ontario office.

Terms

1. The On-Site labor charges are based on a not-to-exceed 10-hour workday. Hours in excess of the 10-hour day will be invoiced at 1.5 times the applicable labor rate.
2. An Emergency Surcharge will be applied to any urgent call-out for unscheduled emergency work requiring immediate deployment and requiring disruption of already scheduled work. The Emergency Surcharge will be determined on a case-by-case basis.
3. Business hours for daytime Technical Support by telephone are 8:00 am to 5:00 pm from Monday to Friday for the time zone in which the support office is located. 24/7 Emergency Technical Support or Technical Support between 8:00 am and 8:00 pm Eastern Time can be obtained by contacting our Oakville office.
4. Delays due to site or schedule factors will be invoiced at the rates shown above.
5. For extended duration work, staff rotations are scheduled on a monthly basis and may be subject to travel expense charges.
6. Automobile mileage expenses will be invoiced at USD $ 0.40 per mile.
7. Hotel, airfares, flight change fees and associated travel expenses will be invoiced at 1.15 times cost.
8. Meals, unless otherwise indicated, will be invoiced at USD $ 52. per day.
9. State taxes, Use taxes and all other taxes are extra where applicable. ZENON requests of the client to provide applicable tax exemption certificates with its purchase order or work order.
10. All services provided by ZENON are governed by the prevailing version of ZENON's Standard Terms and Conditions, Service, Form ZTC.
11. Rates are subject to change without notice after December 31, 2004.

6.8 Summary Of Field Service Support for the Installation Contractor

The following table is a summary of the Field/Technical Support Services provided by ZENON for the Installation Contractor.

Table 3: Summary of ZENON Field/Technical Support

Task	Number of Trips	Allotted time (On-site person-days)
Installation Assistance/equipment unloading	2	8
Membrane Installation Assistance	1	10
Field Testing and Commissioning	2	15
Total	**5**	**33**

Any additional days of Field Service required will be billed to the Installation Contractor at ZENON's Field Service Labor Rates specified in Table 2.

A person-day is an 8-hour workday or travel day of an individual ZENON staff member on any given day (business day, weekend, or holiday).

6.9 Operator Training

ZENON has developed complete Operator Training Courses with varying degrees of content to suit the needs of its Customer's personnel. This training is provided exclusively for the Owner's operators. A summary of the training included in the pricing submitted by ZENON follows below. Additional training can be added if desired at additional cost.

The Owner will provide a suitable classroom with associated teaching facilities and materials such as blackboards, overhead, projectors, pens, pencils, writing pads etc., for the duration of the course. ZENON prefers that where possible training be carried out at the plant where the equipment supplied is located, but where this is not possible in-class training can be provided at some other suitable location.

Table 4: Summary of ZENON Supplied Training

Task	Number of Trips	Allotted time (On-site person-days)
Owner's Operator Training	1	10
Total	**1**	**10**

It is anticipated that a portion of the training will occur during the commissioning and functional testing of the plant.

Any additional days of training required will be billed to the Owner at ZENON's Field Service Labor Rates specified in Table 2.

Any training days not used by the Owner will be refunded to the Owner through the Contractor at the daily Field Service Labor Rates per Section 6.7.

A person-day is an 8-hour workday or travel day of an individual ZENON staff member on any given day (business day, weekend, or holiday).

APPENDICES

Appendix A: Bill of Materials (BOM)

Appendix B: EJCDC P-700 Standard General Conditions & Supplemental Conditions

Appendix C: Equipment Shipment, Receiving, Unloading, Handling and Storage Requirements